# Good practice benchmarking of the rail infrastructure managers

## PRIME 2016 Benchmarking Report

Report developed under cooperation between PRIME KPI&Benchmarking Subgroup and European Commission Directorate for Mobility and Transport

June 2018

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# Foreword by PRIME Co-Chairs

The goal of PRIME members is to provide safe, reliable and efficient railway infrastructure for transporting people and goods. The KPI subgroup was set up with the goal to monitor and benchmark performance and by doing so to strive for better results. We are pleased that after four years of preparatory work, the PRIME KPI subgroup has delivered its first benchmarking report – covering the years 2012-2016.

The PRIME benchmarking framework is:

- comprehensive – including a selection of indicators covering a broad range of topics and
- has been developed by the industry itself and focussing on what is useful from the infrastructure managers' business perspective.

We believe that these two elements have been key features to ensure its wide support.

For the infrastructure managers, it helps to understand where each organisation stands and where there is potential for improvement. For the European Commission, there is an invaluable opportunity to receive feedback and to monitor the progress with respect to EU policy priorities. This first report focuses on a small number of high level KPI's. It will be progressively enlarged by new KPI's and enriched by new analysis of IM performance. The KPI subgroup has also set up a database and IT tool which can be used for analysing the trends and support management decisions on a daily basis.

We believe that in the long term, PRIME data and definitions can serve the needs of a large range of industry experts and public authorities. Without measuring and sharing the results, it is impossible to distinguish success from failure and to demonstrate to the wider public that the rail sector is improving its service provision.

Each organisation comes with its own history as well as often different governance and financing models. Therefore, there is no single measure of success that we should seek to impose. But we believe that the KPI approach is very appropriate in this context and there is always room for improvement and mutual learning.

We would like to thank the PRIME KPI subgroup chairs – Jan Pettersson from Trafikverket and Rui Coutinho from IP Portugal - as well as the members of this group from 15 organisations and EC for this outstanding achievement. Finally, we would urge all PRIME members to join the benchmarking framework so that our database becomes, in the coming years, the most renowned source of complete and reliable data!

PRIME co-chairs

Alain Quinet

*SNCF Réseau*
*Deputy Director General*

Matthew Baldwin

*European Commission, DG MOVE,*
*Deputy Director General*



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## Table of contents


- **Purpose of this report**
- Context
- Benchmarking results

- Appendix




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# This report provides an overview of KPI data and results – It serves as a starting point for further benchmarking

## Purpose of this report (1/4)

**Who is PRIME?**

PRIME was created in 2013 as a cooperation platform between the European Commission and the European Rail Infrastructure Managers, with the view to facilitate the provision of efficient and effective rail services. PRIME has in total 35 member organisations and 12 of them have participated in the preparation of in this report.

**OBJECTIVE OF PRIME PERFORMANCE BENCHMARKING**

The 4th Railway Package (Article 7f of the Directive 2012/34/EU, as amended by Directive 2016/2370) has formalised and specified the missions of PRIME. In particular, it states that *"[…] the network meets at regular intervals to […] monitor and benchmark performance. For this purpose, the network shall identify common principles and practices for the monitoring and benchmarking of performance in a consistent manner".*

Infrastructure managers are natural monopolies and performance benchmarking is a relevant exercise to assess, manage and improve their performance. Many indicators are already available within the sector but they are not harmonised and are incomplete. Now, for the first time, all Infrastructure Managers are mobilised to provide a coherent framework of performance indicators.



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# This report provides an overview of KPI data and results – It serves as a starting point for further benchmarking

## Purpose of this report (2/4)

**OBJECTIVE OF PRIME PERFORMANCE BENCHMARKING (continued)**

Performance Benchmarking covers several dimensions of rail infrastructure management: punctuality, costs, resilience, sustainable development, safety, etc. Our objective is to provide a comprehensive view of the performance of the networks with the opportunity for Infrastructure Managers to identify areas for improvement and the sources of inspiration among their peers.

A **first internal benchmarking report** has been produced based on 2016 data accompanied by assessment of data completeness and robustness, of 49 selected indicators and first assessment of KPI correlations, qualitative relationships between KPIs and potential performance drivers in the different performance dimensions. The purpose of this report was to illustrate the current performance of IMs and identify areas for further analysis. Thus, this is only the beginning of a longer term process.

For the future, we will increase data availability - both KPIs and participants - and provide reports with in 'depth analysis' identifying trends and best practice. Our intention is to give information and fruit for thought to stakeholders, researchers, economists and politicians. Above all, **the general objective for the project is to deliver insight and inspiration for better decisions on developing a sustainable and competitive infrastructure management which provides high quality services, as expected by operators, passengers and freight companies.**

A consistent benchmark of this kind has never been done before. PRIME was able to set it up thanks to the strong commitment of a large number of Infrastructure Managers. We will progressively improve the participation and the publication with the view to foster accountability, transparency and, ultimately, performance.



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# This report provides an overview of KPI data and results – It serves as a starting point for further benchmarking

## Purpose of this report (3/4)

**OPERATIONAL ACHIEVEMENTS**

PRIME KPI and its Benchmarking Subgroup has been working actively for the last four years. Through 30 meetings, 12 active member organizations and three pilot projects we have achieved the following results:

- An internal **IT tool** developed by the EC IT team in cooperation with civity Management Consultants has been put into operation for data collection and validation and is being further developed to enhance reporting, interpretation and management of data.
- The **KPI definitions** are documented in a PRIME KPI Catalogue that is available on
  https://webgate.ec.europa.eu/multisite/primeinfrastructure/content/subgroups_en

**PRIME 2016 BENCHMARKING REPORT: THE STARTING POINT FOR FURTHER BENCHMARKING**

- The present **PRIME 2016 Benchmarking report** shows the results of a selection of indicators which based on the initial assessment of the internal report were considered mature enough for publishing. **This first report with purely factual information** serves as a starting point for further data sharing and analysis. As indicated in the document, for some indicators, the data of individual infrastructure managers still deviates from agreed definitions, but the members continue their efforts to improve the comparability of data.
- This is PRIME's first Benchmarking report – i.e. its “best ever”. But the participating members are committed that each next report will become an improvement over the previous one.



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# This report provides an overview of KPI data and results – It serves as a starting point for further benchmarking

## Purpose of this report (4/4)

**PRIME KPI NEXT STEPS**

- **Enhancing participation:** the number of members involved in the benchmarking report, currently 12 will progressively increase
- **Improving the dataset:** The KPI framework will continue to be developed over the coming years, with the KPIs refined, completed, and the quality of the input data and hence output metrics improved.
- **In-depth studies**: based on the results achieved, PRIME will work on in-depth analyses which include interpretation of benchmarking results with detailed analyses of contextual factors and identification of root causes for performance differences on selected topics. The topic chosen for 2018 is punctuality.
- **Preparing and sharing reports:** PRIME aims to publish annual benchmarking reports. In addition it will prepare 'special reports' presenting the outcome of the in-depth analyses.



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## Table of contents


- Purpose of this report
- **Context**
- Benchmarking results

- Appendix




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# PRIME benchmarking is a tool to support the IMs' path to a better performing single European market

## Context

| Challenges | PRIME benchmarking |
| --- | --- |
| **European challenges** towards a Single European Railway Area<br>• Integration of infrastructure & interoperability<br>• Management of international traffic restrictions and disruptions<br>• Difficulties in cross-border operations | • Improved **European network efficiency** through cooperation of IMs around common quality criteria |
| **IMs' challenges** towards efficient infrastructure management<br>• Increasing performance requirements from governments and customers vs. worn out assets and investment backlogs<br>• Requires systematic and efficient asset management to deliver better performance, optimized costs and controlled risks | • Improved **service quality and efficient infrastructure management** through information sharing and mutual learning |



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# The overall objectives and benefits of the PRIME KPI exercise provide a constant orientation to improvement

## Context – Objectives and benefits of PRIME KPI

- Exchange of best practices and performance benchmarking are the formal tasks of PRIME (Platform of Rail Infrastructure Managers in Europe) who has undertaken the **role of the European Network of Infrastructure Managers** as foreseen in the 4th Railway Package
- The PRIME group has identified a number of **objectives and corresponding benefits** which can be achieved through a benchmarking comparison of KPIs and exchange of best practices:
  - Share information, knowledge and practice between railway infrastructure managers (IMs) and **learn from each other** in order to **improve performance and business development**
  - Understand the **drivers for each KPI** and their manageability
  - Identify **relative performance** of IMs in different dimensions to each other and understand existing differences and reasons for them
  - Undertake **root cause analysis** and explore what organisations do differently and what their best practice is
  - Inform decision makers about choices to achieve performance improvements so that more **informed management decisions** can be taken
- Sharing the results with the public can also **support engagement with key stakeholders**:
  - Data can be used to support negotiations with public authorities and trade unions, and it can also be used for engagement with regulators
  - Provides evidence to monitor whether national or EU policies are working or not
  - Is a communication tool vis-à-vis customers and business partners to indicate trends
- A further important outcome of the PRIME KPI work is a good quality, comparable and easily accessible **dataset**



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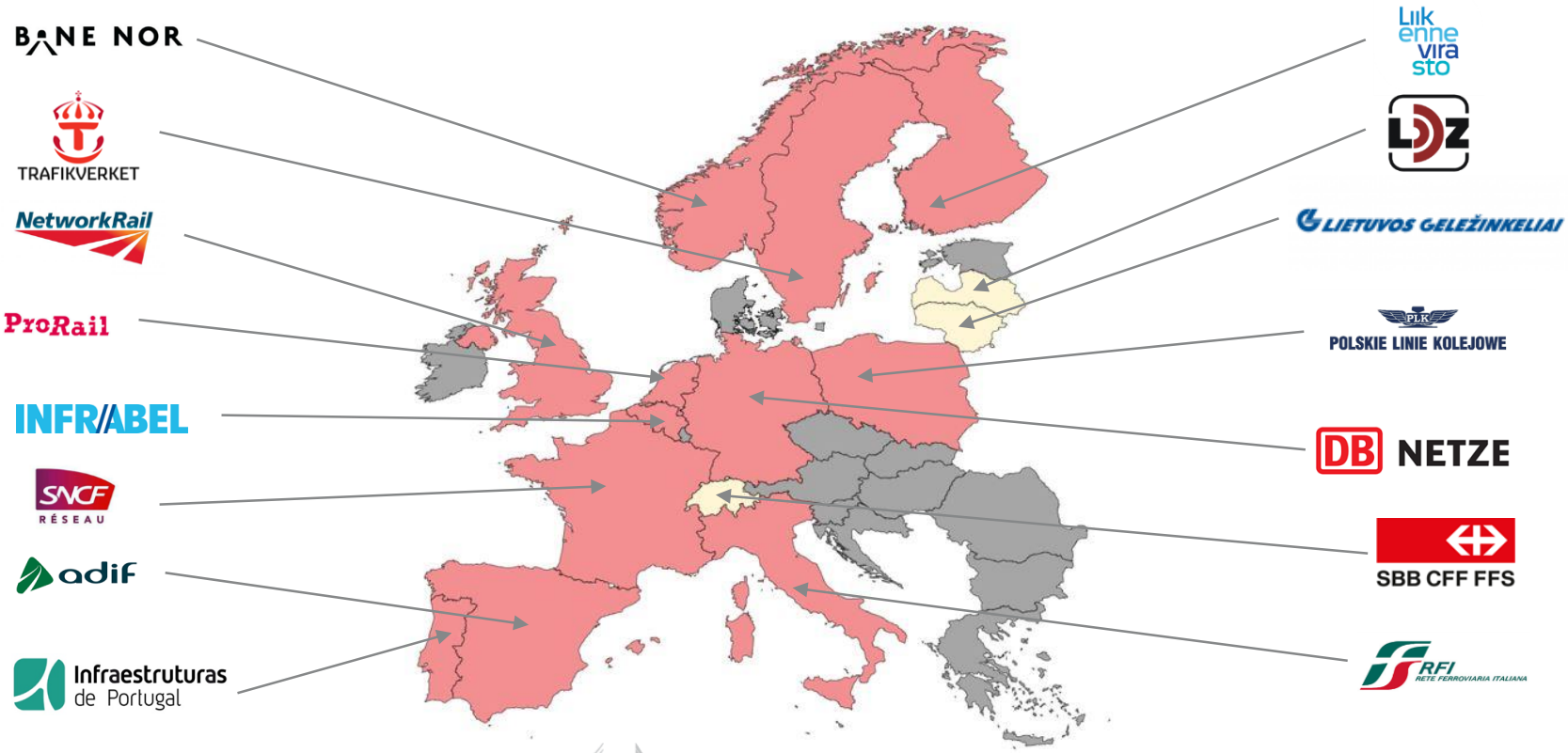
# The PRIME KPI Subgroup has been growing since 2014, having 12 participants in the report and 3 new members

## Context – PRIME KPI Active Members



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# A number of factors need to be in place to make this benchmarking exercise successful

## Context – Key success factors of PRIME KPI

There are a number of factors to be considered for a successful and meaningful benchmarking exercise:

- **Meaningful and supportive KPIs** strongly aligned with the peer group's strategic objectives and providing a good starting point for the identification of good practices
- **Clear and well defined indicators** are essential for reliable and comparable results
- **Reliable and high data quality** through a thorough challenging of the collection and completeness of data including plausibility checks and gap-filling
- **Comparability of results** can be increased by applying adjustments to normalise data based on structural differences between IMs, as well as identifying limitations and caveats very clearly to avoid misinterpretation and misleading conclusions
- **Target group-oriented tools and reporting** should be developed which are flexible, easy-to-use and correspond to the needs of benchmarking experts, team members, and senior managers, etc., using carefully defined requirements.
- A strong **senior management commitment** is essential to support and resource the exercise, and provide confidence to interpret, understand and implement results

## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - **Overview, framework and maturity**
  - KPI results
  - Assessment of the current status of benchmarking

- Appendix




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# This report provides selected high level and benchmarking KPIs of the framework's business dimensions

## Overview

- First, the framework and performance indicator hierarchy is illustrated and, based on their completeness and robustness, **35 KPIs were selected for publication**, while 14 KPIs were not mature enough and are excluded from this report.
- An **example slide** of results is provided explaining contents and meaning of the graphical illustration.
- Each business **dimension** is introduced by its **objectives** as described in the PRIME catalogue and each **category** is introduced by the current **definitions** of KPIs in the category.
- This is followed by a **comparison** of these KPIs per IM illustrated in **bar-charts** showing for each IM the **most recent available data** among the years 2012 – 2016. Where KPIs for 2016 are not currently available, presented values are based on data from the most recent available year. For example, if the latest data provided by an IM is from 2015 then 2015 data is presented in the chart.
- Bar-charts also indicate the **peer average** across all IMs based on most recent available data as well as the **individual IM mid-term averages** (2012 – 2016 where available).
- Intentionally, benchmarking **results are not interpreted** and possible **reasons for performance differences are not investigated in detail** at this stage.
- Some **comments from IMs** are added only to explain deviations from agreed PRIME definitions.
- A diversified set of reasons has been recorded for why an IM does not present data for a certain KPI, including lack of data, complex calculations, low data robustness, data sensitivity concerns and others.



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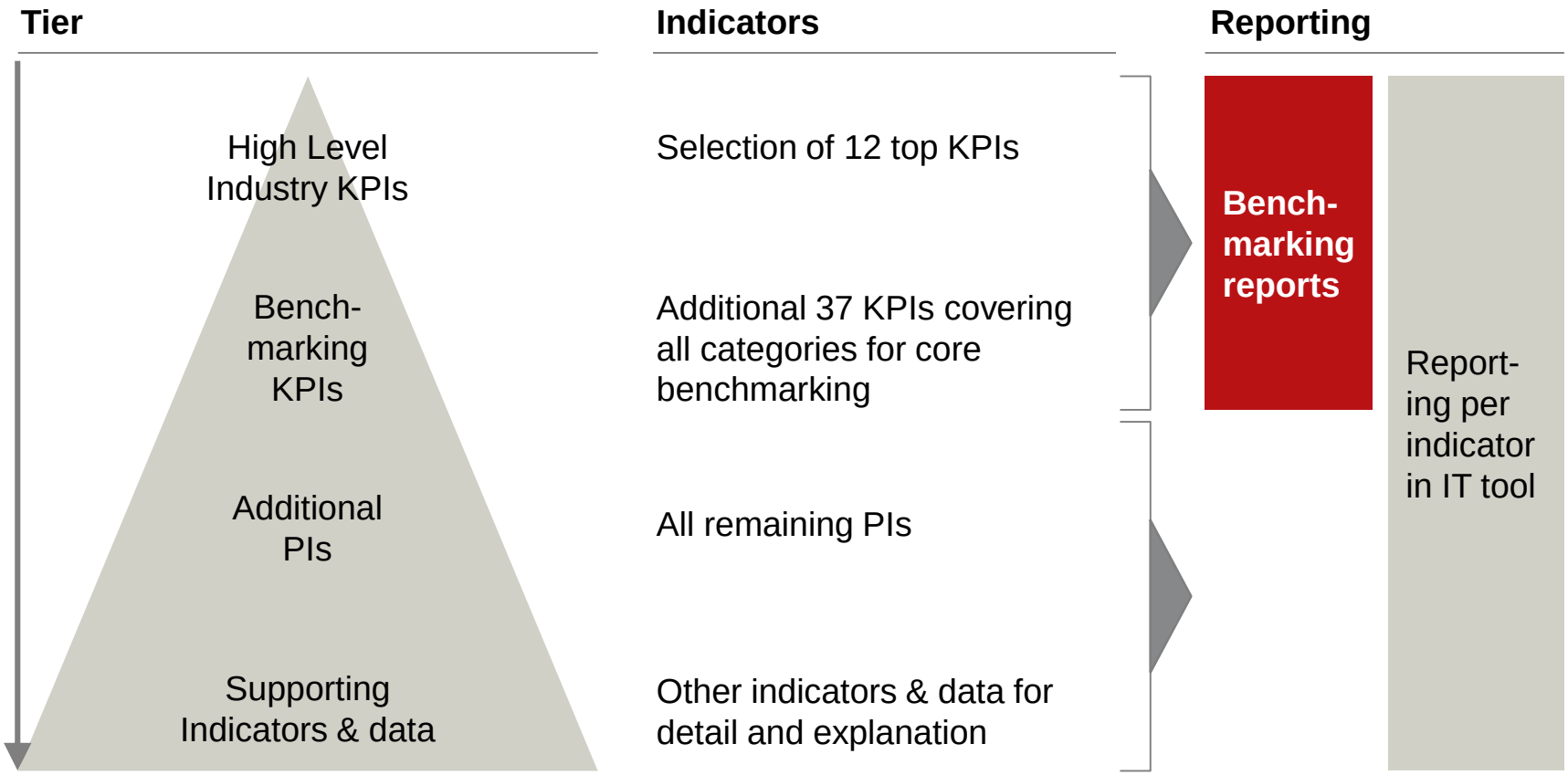
# The PRIME performance indicators have been tiered into four levels, with the main KPIs considered for reports

## Framework – Performance indicator hierarchy



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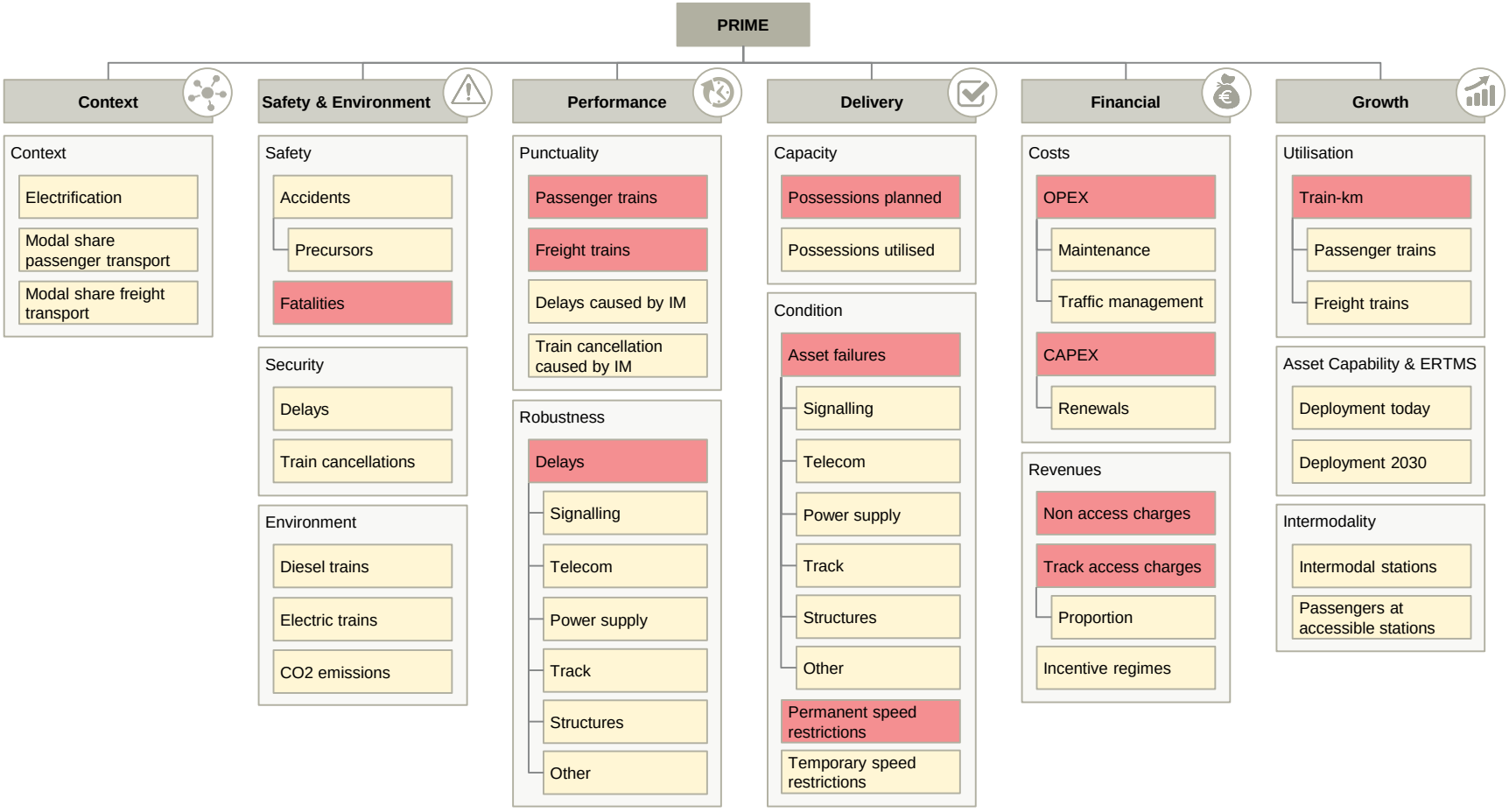
# A framework was established including 12 High Level Industry KPIs and 37 Benchmarking KPIs

## Framework – Overview of High Level Industry and Benchmarking KPIs



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# The subgroup will assess how data completeness and robustness can be improved especially for critical KPIs

## Data completeness and robustness

- Data completeness for **high level KPIs** ranges from close to 60% to 70% across the years
- **Benchmarking KPIs** are generally less populated with completeness ranging from close to 50% to 55% across the years, reflecting a prioritised collection of high level KPI data by IMs
- **Increasing data completeness** across reporting periods for both high level and benchmarking KPIs suggests that IMs are implementing and improving internal data collection processes
- While the context, safety and environment, financial and growth dimensions are relatively well populated and robust, the **performance and delivery dimensions** show room for improvement
- 14 KPIs have been identified as being **critical KPIs** in terms of low data completeness and/or robustness and reasons for these include demanding definitions or calculation methodologies, differing internal reporting concepts, unavailability of data and data being considered as sensitive by IMs
- Against this background it is important for the subgroup to assess **how data completeness and robustness can be improved** especially for the critical KPIs



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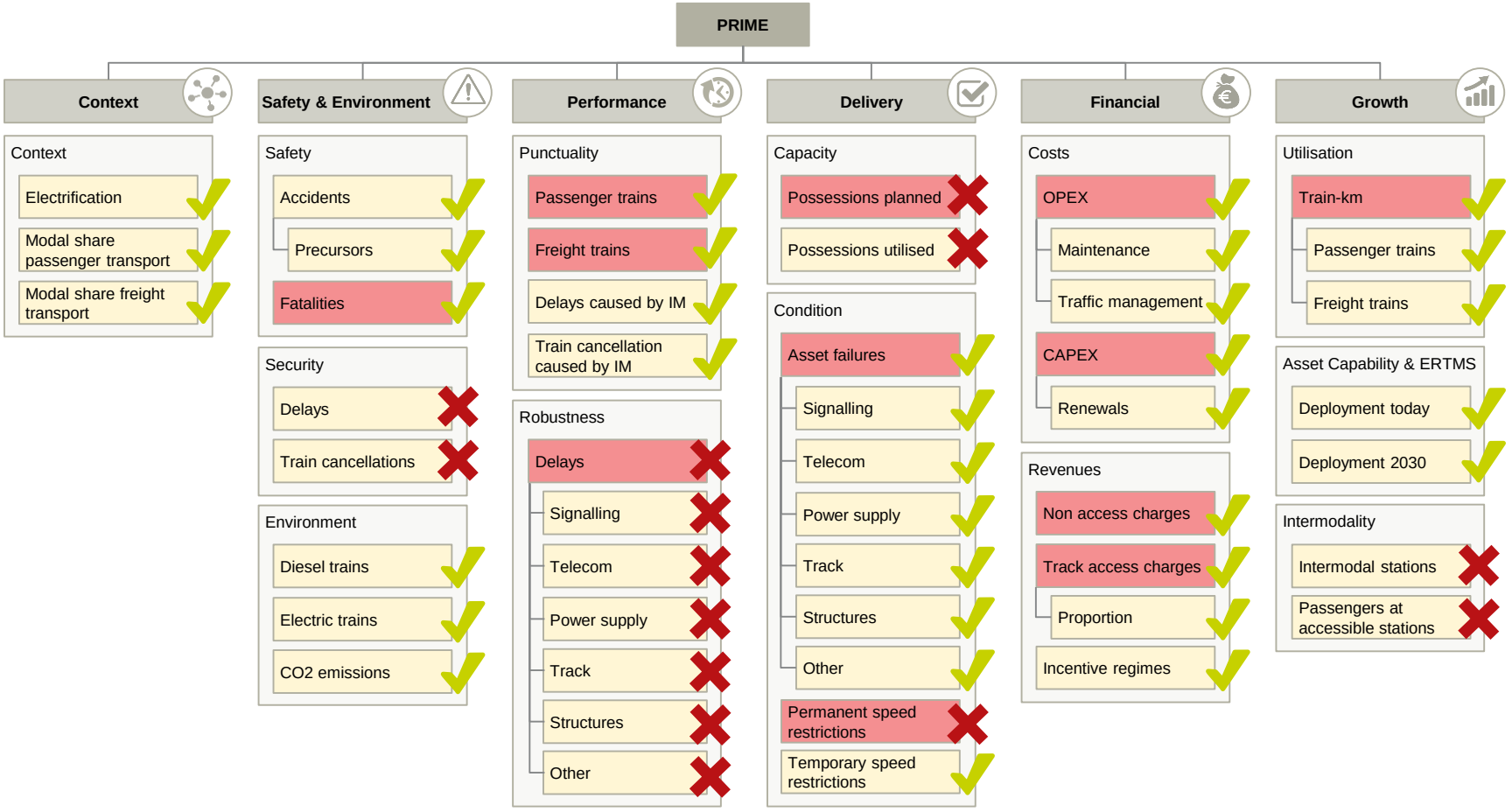
# 35 KPIs are ready for publication – 14 KPIs were not mature enough to be included in this 2016 Benchmarking Report

## Maturity of KPIs



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# Example slide: Benchmarking results

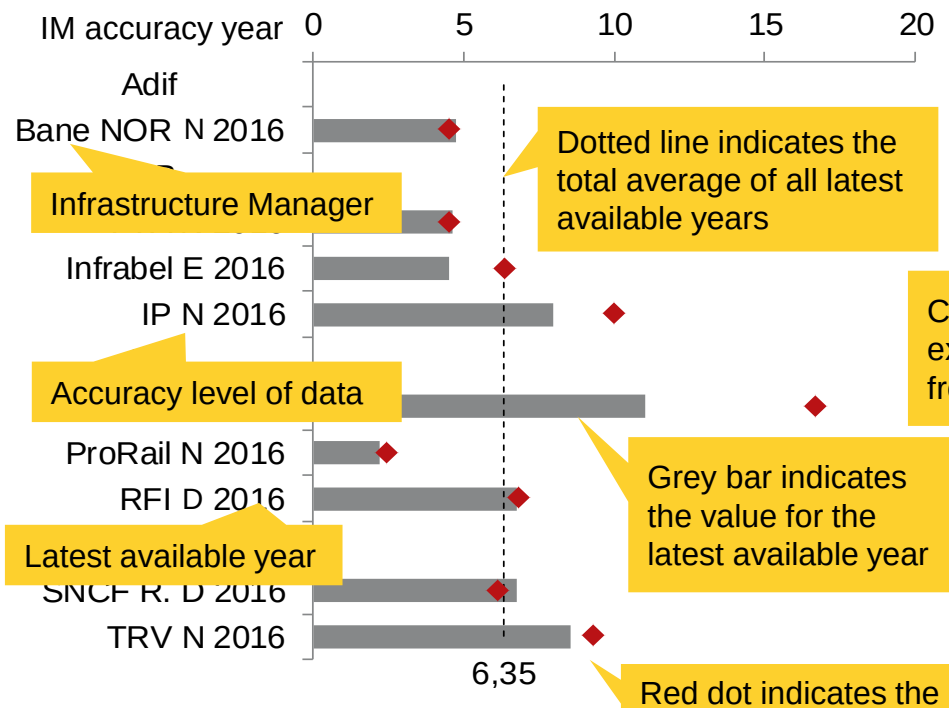
## Delay minutes per train-km caused by the IM

Minutes per thousand train-km

KPI 31

Name and unit of KPI

Number of KPI




Dotted line indicates the total average of all latest available years

Grey bar indicates the value for the latest available year

Red dot indicates the average value of all available years

- The average of delays caused by IMs in the European railway network is around 6 minutes per train-km
- Delay causes include: Operational planning, Infrastructure installations, Civil engineering causes, other IMs res… others

Comments from IMs explain deviations from definition

Example

**Comments from IMs:**
Infrabel: Shunting data not included in the train-km.
RFI: Rounding rule and measuring points differs from definition.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - **Context**
    - Safety and environment
    - Performance
    - Delivery
    - Financial
    - Growth
  - Assessment of the current status of benchmarking

- Appendix




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# This category provides an overview of the characteristics and configuration of each IM

## Context – objectives

- Understanding the size and relative significance of the railway in each country and the market for railway services
- Provision of valuable background information and relevant context when reviewing and assessing other KPIs and additional performance indicators

Source: PRIME Catalogue Version 2.0, 25 September 2017



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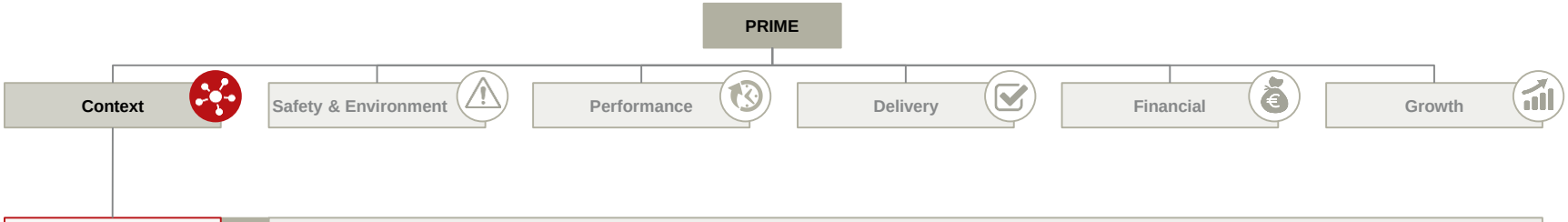
# This category provides an overview of the characteristics and configuration of each IM

## Context – Overview




Context

- Electrification
- Modal share passenger transport
- Modal share freight transport

**This category provides an overview of the characteristics and configuration of each IM. This enables an understanding of the size and relative significance of the railway in each country and the market for railway services, which provides valuable background information and relevant context when reviewing and assessing other KPIs and additional performance indicators.**

| KPI Name | KPI Definition |
|---|---|
| Degree of electrification of total network – all lines | Degree of electrification of total network - all lines |
| National modal share of rail in passenger transport | Proportion of national rail passenger-km compared to total passenger-km of passenger cars, buses / coaches, and railways (Source: Eurostat based on data reported by national statistical offices) |
| National modal share of rail in freight transport | Proportion of national rail tonne-km compared to total tonne-km of road, inland waterways and rail freight (Source: Eurostat based on data reported by national statistical offices) |

High Level Industry KPI  Benchmarking KPI



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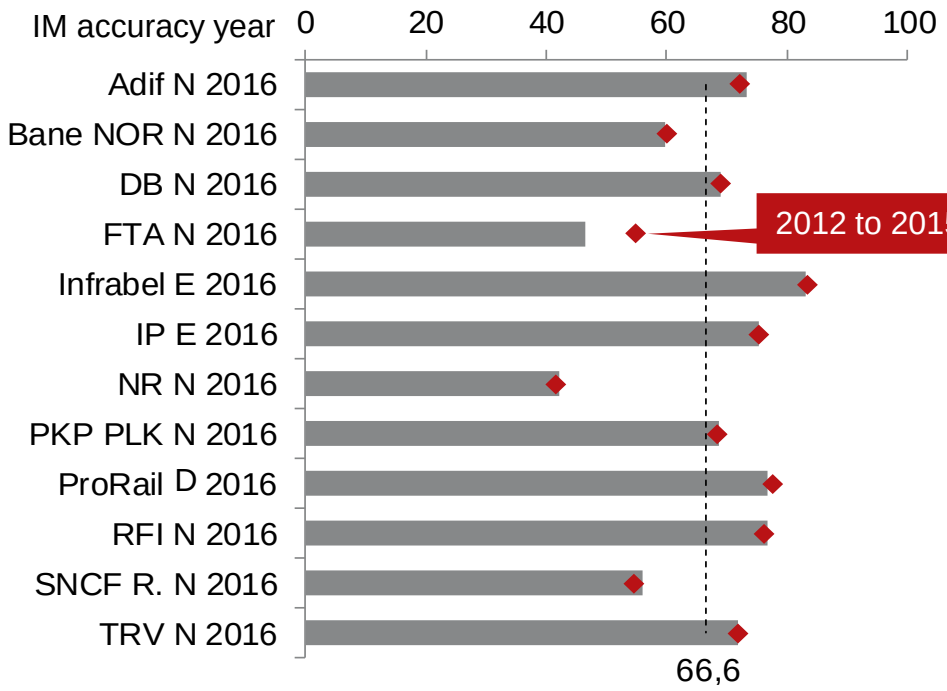
# Degree of electrification of total network – all lines

KPI 1

% of track-km




- Two thirds of European railway networks are electrified, the degree of electrification has been quite stable in the period considered

**Comments from IMs:**
IP: Some sidings and depots not accounted for.
ProRail: Electrified track refers only to main track
TRV: Electrified track refers only to main track

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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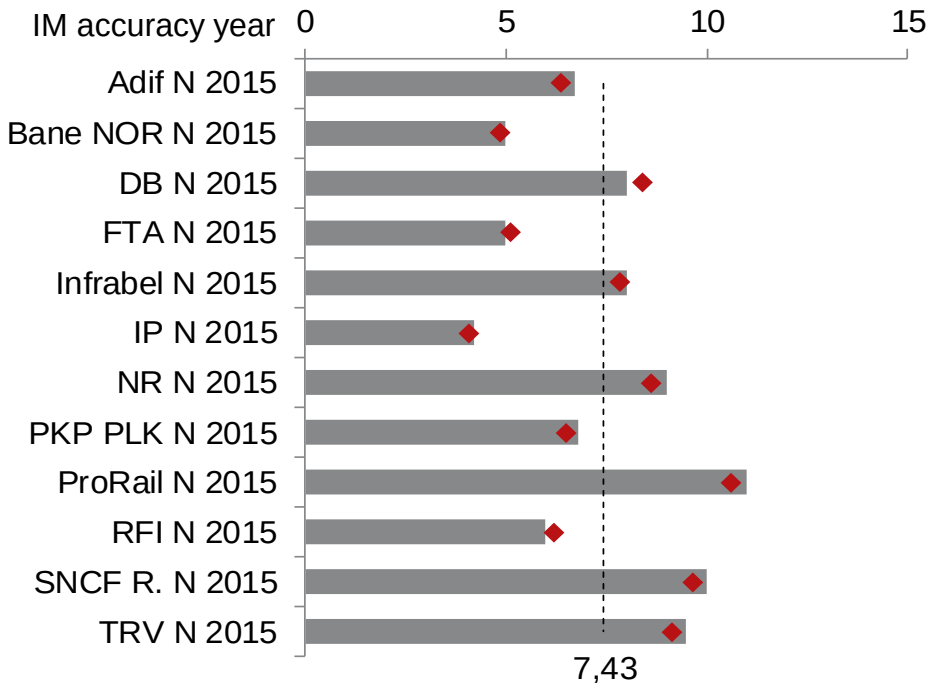
# National modal share of rail in passenger transport

KPI 2

% of passenger-km




- Based on passenger-kilometres, the average modal share of rail in passenger transport in Europe is 7%

Data provided by European Commission
Source: Eurostat based on data reported by national statistical offices

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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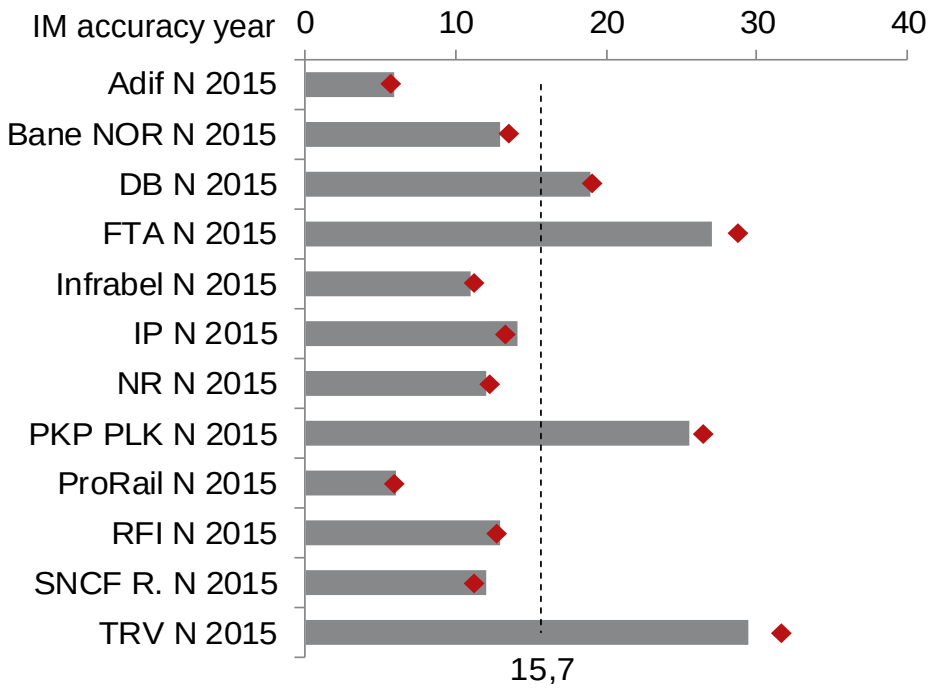
# National modal share of rail in freight transport

KPI 3

% of tonne-km




- Based on tonne-kilometres, the average modal share of rail in freight transport in Europe is 16%

Data provided by European Commission
Source: Eurostat based on data reported by national statistical offices

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - Context
    - **Safety and environment**
    - Performance
    - Delivery
    - Financial
    - Growth
  - Assessment of the current status of benchmarking

- Appendix




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# Aim is to demonstrate the level of safety and security as well as the environmental impact provided by the railway

## Safety, Security & Environment – objectives

- Understand and improve the ability of an IM to manage and operate its network and users of its network in such a way as to maximise safety and security (ALARP) for its customers, staff, its partners – operators, contractors and suppliers – and the general public; and
- Demonstrate the ability of an IM to manage its network in such a way as to minimise short term and long term environmental impacts by itself and its staff, its operators, suppliers and customers.

Source: PRIME Catalogue Version 2.0, 25 September 2017



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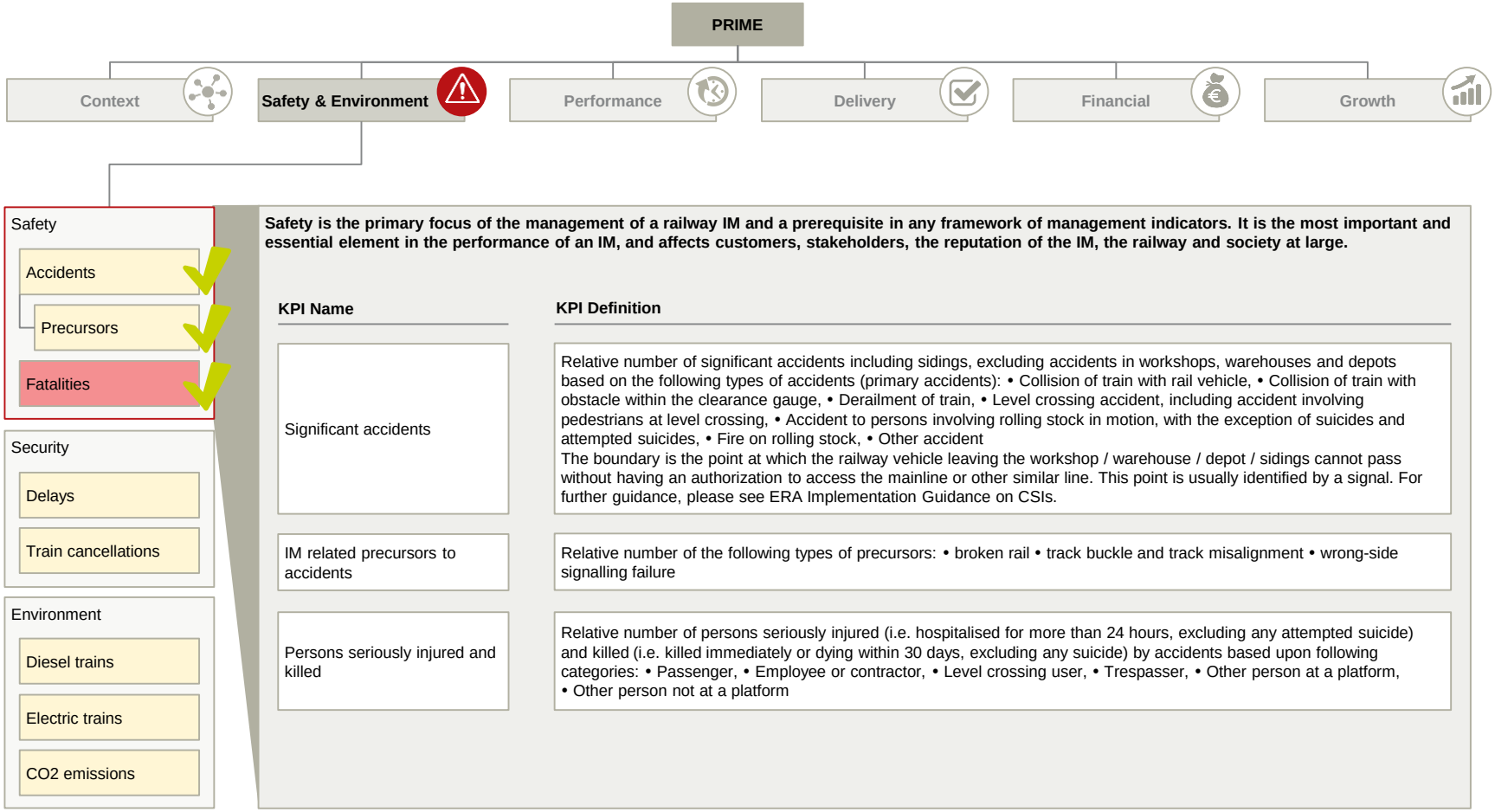
# Safety & Environment – Safety – Overview




**Safety is the primary focus of the management of a railway IM and a prerequisite in any framework of management indicators. It is the most important and essential element in the performance of an IM, and affects customers, stakeholders, the reputation of the IM, the railway and society at large.**

| KPI Name | KPI Definition |
|---|---|
| Significant accidents | Relative number of significant accidents including sidings, excluding accidents in workshops, warehouses and depots based on the following types of accidents (primary accidents): • Collision of train with rail vehicle, • Collision of train with obstacle within the clearance gauge, • Derailment of train, • Level crossing accident, including accident involving pedestrians at level crossing, • Accident to persons involving rolling stock in motion, with the exception of suicides and attempted suicides, • Fire on rolling stock, • Other accident<br>The boundary is the point at which the railway vehicle leaving the workshop / warehouse / depot / sidings cannot pass without having an authorization to access the mainline or other similar line. This point is usually identified by a signal. For further guidance, please see ERA Implementation Guidance on CSIs. |
| IM related precursors to accidents | Relative number of the following types of precursors: • broken rail • track buckle and track misalignment • wrong-side signalling failure |
| Persons seriously injured and killed | Relative number of persons seriously injured (i.e. hospitalised for more than 24 hours, excluding any attempted suicide) and killed (i.e. killed immediately or dying within 30 days, excluding any suicide) by accidents based upon following categories: • Passenger, • Employee or contractor, • Level crossing user, • Trespasser, • Other person at a platform, • Other person not at a platform |

High Level Industry KPI  Benchmarking KPI



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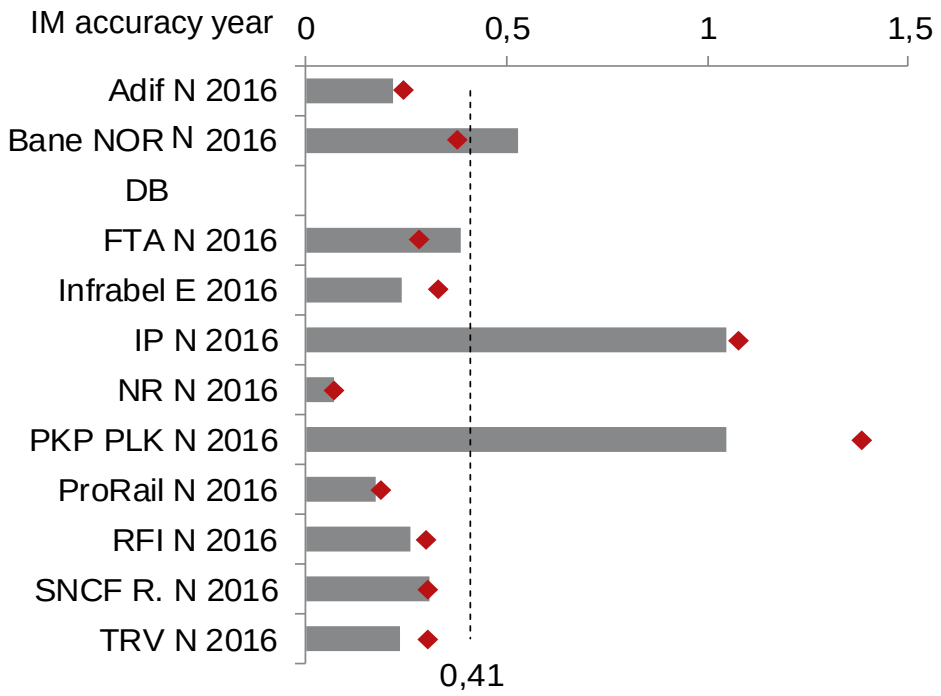
# Significant accidents

KPI 7

Number per million train-km




- On average European infrastructure networks show 0,4 accidents per million train kilometre

**Comments from IMs:**
Infrabel: Shunting data not included in the train-km.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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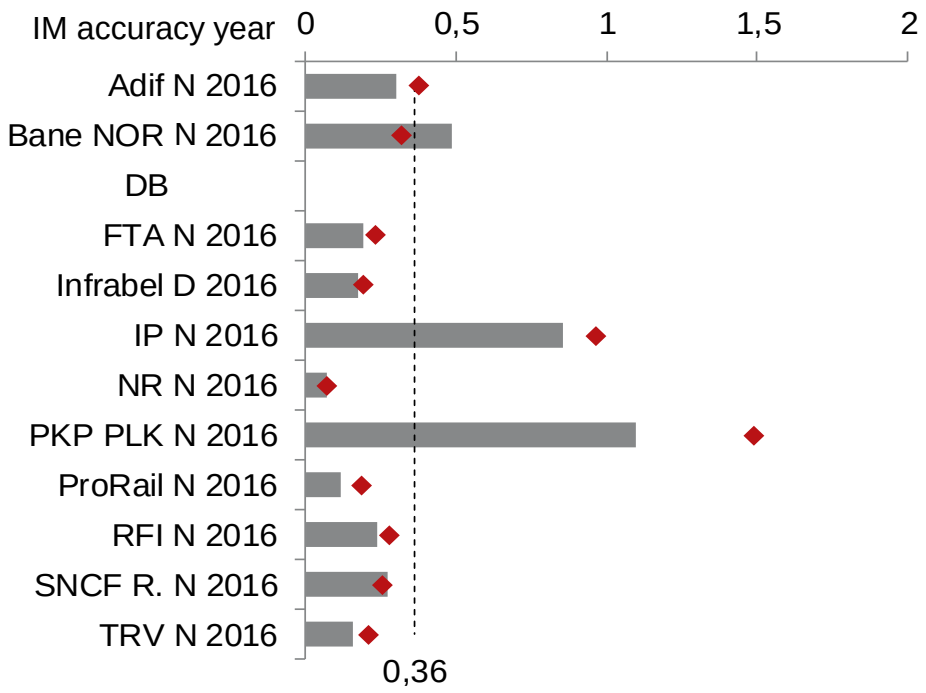
## Persons seriously injured and killed

KPI 8

Number per million train-km




- The average of safety related injuries or fatalities in the European railway network is 0,36 per million train-kilometres

**Comments from IMs:**
Infrabel: Shunting data not included in the train-km.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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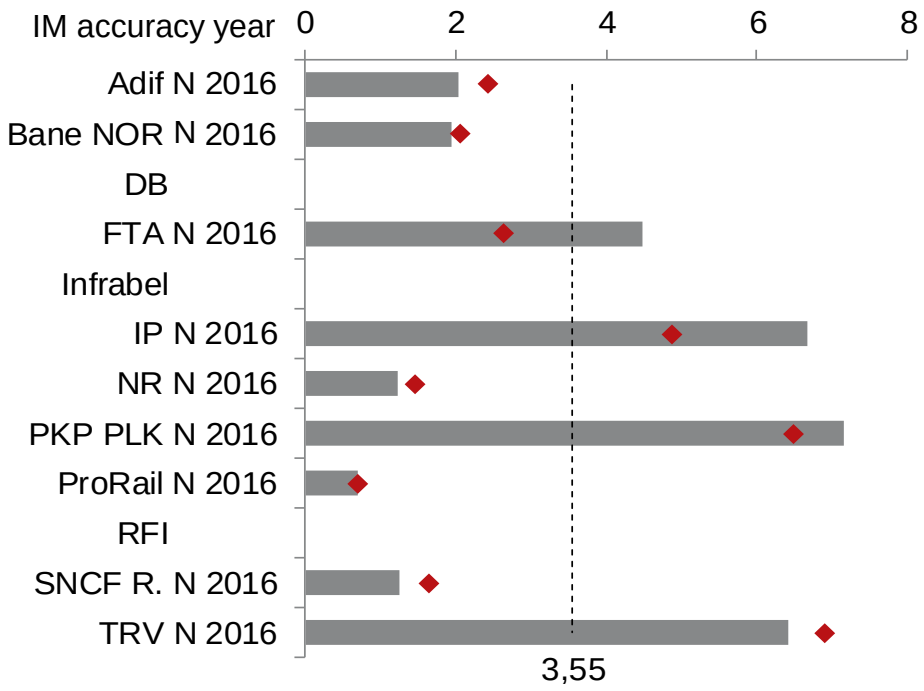
## IM related precursors to accidents

KPI 12

Number per million train-km




- Precursors like broken rails and wrong side signalling failures occur 3,6 times per million train-km

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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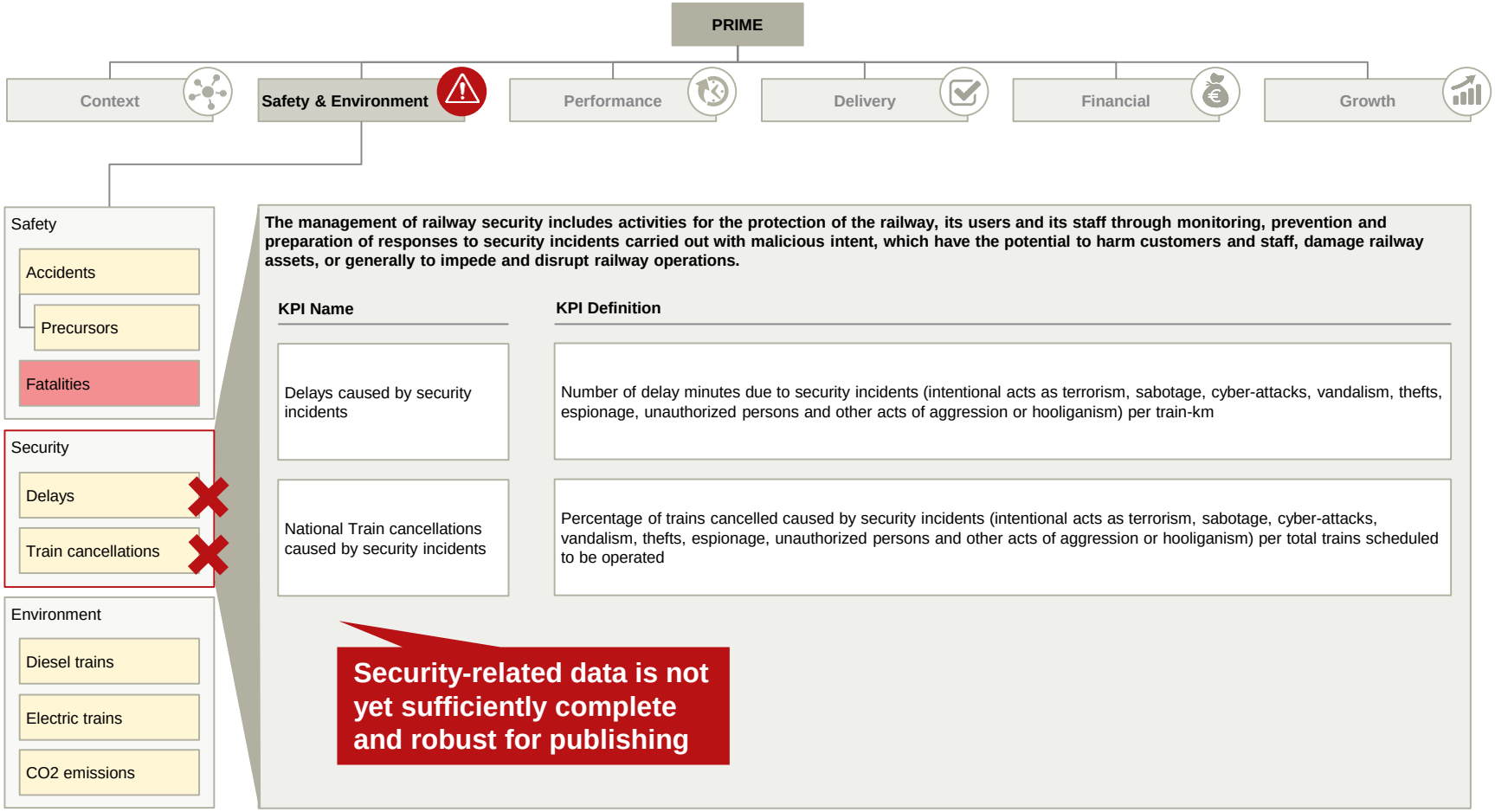
# Safety & Environment – Security – Overview



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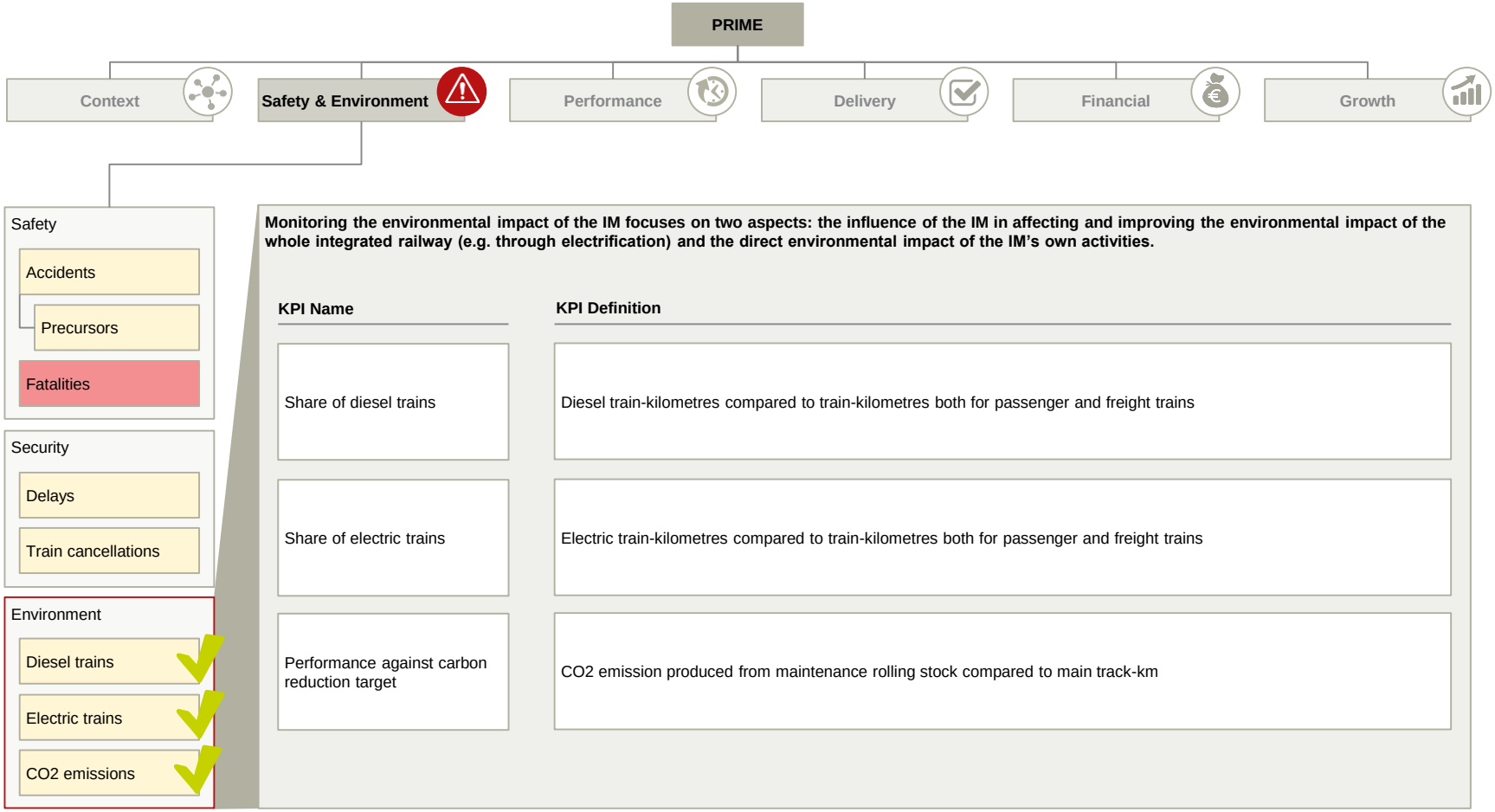
# Safety & Environment – Environment – Overview




**Monitoring the environmental impact of the IM focuses on two aspects: the influence of the IM in affecting and improving the environmental impact of the whole integrated railway (e.g. through electrification) and the direct environmental impact of the IM's own activities.**

| KPI Name | KPI Definition |
|---|---|
| Share of diesel trains | Diesel train-kilometres compared to train-kilometres both for passenger and freight trains |
| Share of electric trains | Electric train-kilometres compared to train-kilometres both for passenger and freight trains |
| Performance against carbon reduction target | CO2 emission produced from maintenance rolling stock compared to main track-km |

High Level Industry KPI  Benchmarking KPI



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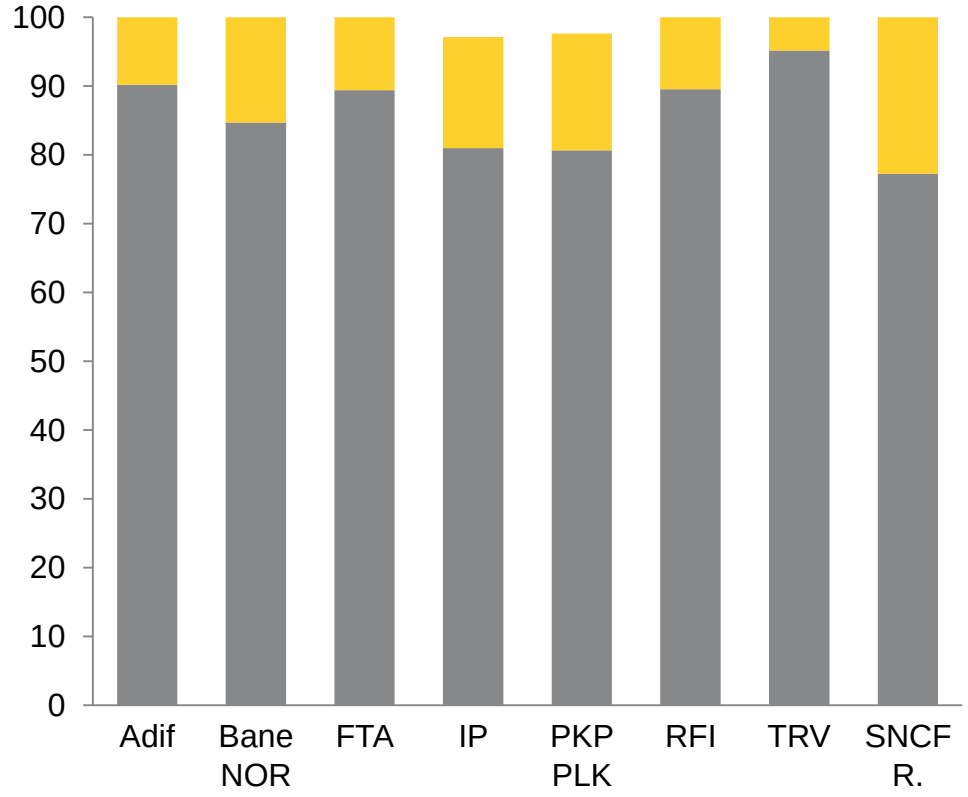
## Share of train types

% of train-km

KPI 18+19




- Overall the share of electrically produced train-kilometres in European countries is quite high, reaching 86% of the total
- This reflects the degree of electrification of the network which in most countries reaches 70% or more (KPI 1)

Share of diesel trains  Share of electric trains

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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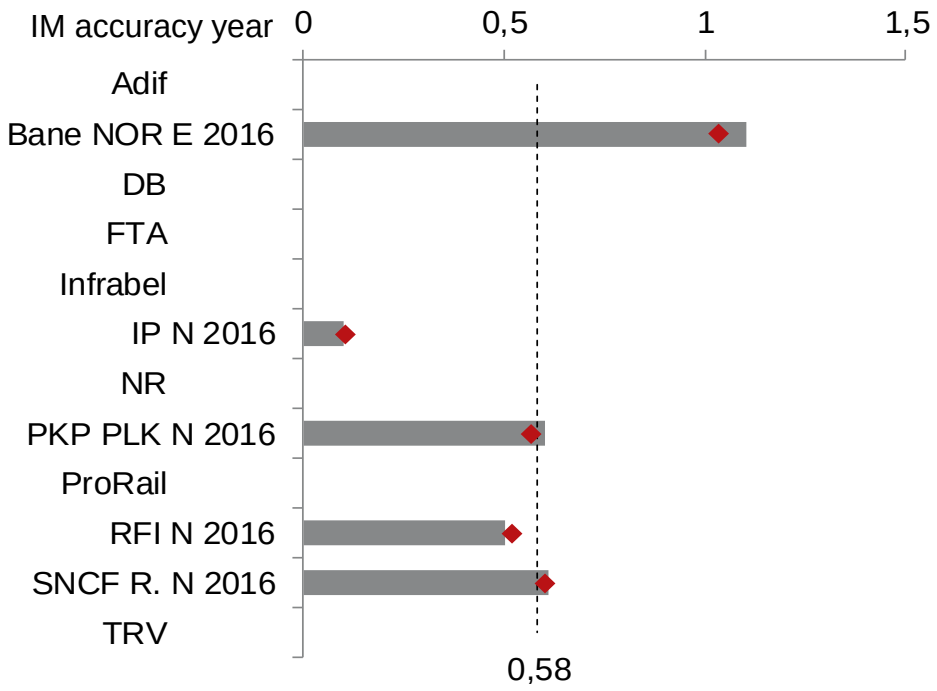
# $CO_2$ emission produced from maintenance rolling stock

KPI 20

$tCO_2$ per main track-km




- The environmental impact of an IM's maintenance rolling stock is measured by its $CO_2$ emissions
- On average 0,6 tons are emitted per main track kilometre annually
- Some values may differ due to different levels of outsourcing

**Comments from IMs:**
Bane NOR: Only own working machines.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - Context
    - Safety and environment
    - **Performance**
    - Delivery
    - Financial
    - Growth
  - Assessment of the current status of benchmarking

- Appendix




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# Aim is to describe the network performance and the resulting impact on operators and customers

## Performance – objectives

- Understand the performance of the IM network in relation to other IMs;
- Improve the ability of the IM to enable trains to run on time; and,
- Identify opportunities to improve the management of assets to minimise the number of failures, and the impact of those failures on the operating railway.

Source: PRIME Catalogue Version 2.0, 25 September 2017



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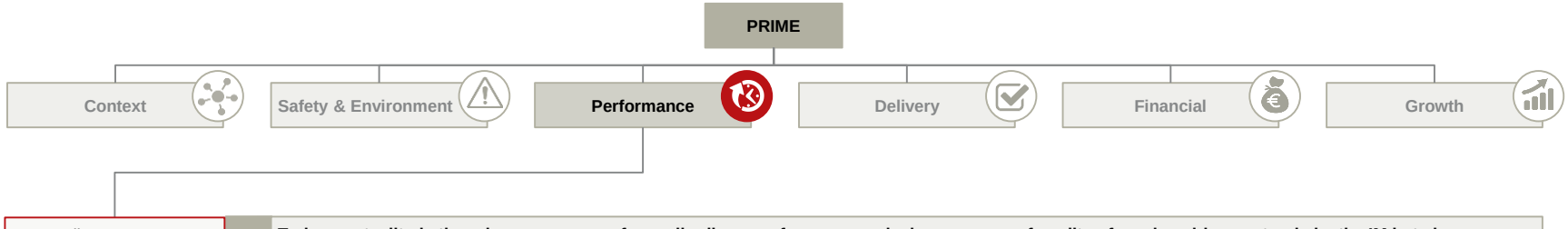
# Performance – Punctuality – Overview




Punctuality
- Passenger trains
- Freight trains
- Delays caused by IM
- Train cancellation caused by IM

Robustness
- Delays
  - Signalling
  - Telecom
  - Power supply
  - Track
  - Structures
  - Other

**Train punctuality is the primary measure of overall railway performance and a key measure of quality of service, driven not only by the IM but also operators and customers. The requirements for punctuality differs between IMs, high-speed routes, core network, customer groups, passenger/freight etc. It is essential to understand both the overall performance of the system through punctuality, as well as the IM's impact on and responsibility for punctuality.**

| KPI Name | KPI Definition |
|---|---|
| Passenger trains punctuality | Percentage of national and international passenger trains (excluding freight and work trains) which arrive at all strategic measuring points with less than or equal to 5 minutes delay compared to all passenger trains that ran against the original time plan, including international traffic |
| Freight trains punctuality | Percentage of national and international freight trains (excluding passenger and work trains) which arrive at all strategic measuring points with less than or equal to 15 minutes delay compared to all freight trains that ran against the original time plan, including international traffic |
| Minutes of delays caused by IM per train-km - IM's responsibility | Average delay minutes caused by incidents that are regarded as IMs responsibility according to UIC leaflet 450-R per train-km. Delay causes should include both primary causes and secondary causes. Primary and secondary causes are described in UIC CODE, 450 – 2 Appendix A. Delay data will be collected at all available measuring points. Delays refer to the time the train arrives at the measuring point. The maximum number of measured delay minutes across all available measuring points is counted with a threshold of more than 5 minutes for passenger services and more than 15 minutes for freight services. UIC CODE 450 – 2 rounding rule number 2: Round down to full minute until 29 seconds, round up to full minute from 30 seconds on, e.g. 5:30 is considered as 6, 5:29 is considered as 5 |
| Percentage of train cancellations caused by the IM | Percentage of fully or partially cancelled national and international passenger trains that are included in the last time table issued the day before the service (or the time table that is valid when the train service takes place) and are caused by incidents for which the infrastructure manager has the responsibility. All sorts of cancelled trains are to be included. |

High Level Industry KPI  Benchmarking KPI



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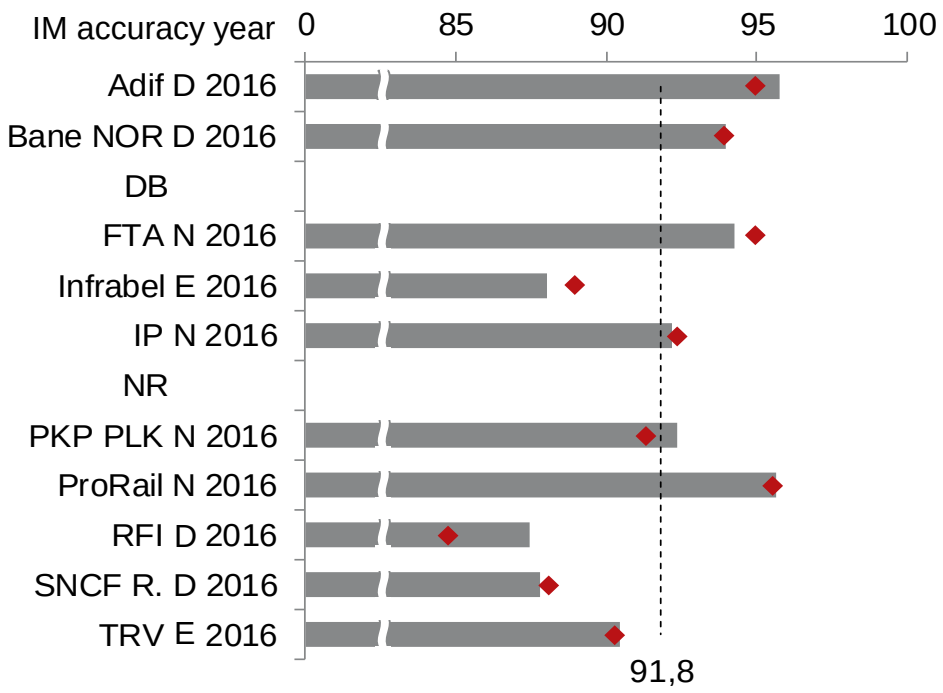
# Passenger trains punctuality

KPI 28

% of trains




- Further work is required by IMs to collect punctuality data according to the PRIME definition, in order to make this measure more comparable across the peer group
- Some IMs use differing measuring points and rounding rules for calculating punctuality
- This KPI accounts for all the responsibilities (RUs and external causes) and not only an IM's activity

**Comments from IMs:**
ADIF: Only HS value is included.
Bane NOR: Rounding rule and measuring points differs from definition.
RFI: Rounding rule and measuring points differs from definition.
TRV: Measuring points differs from definition.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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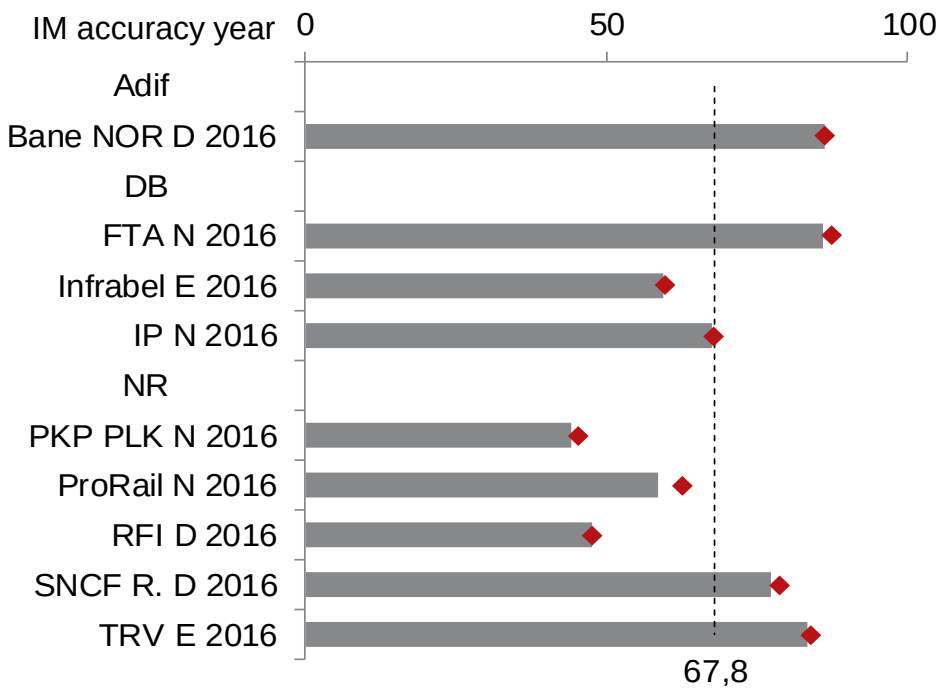
# Freight trains punctuality

KPI 29

% of trains




- Further work is required by IMs to collect punctuality data according to the PRIME definition, in order to make this measure more comparable across the peer group
- Some IMs use differing measuring points and rounding rules for calculating punctuality
- This KPI accounts for all the responsibilities (RUs and external causes) and not only an IM's activity

**Comments from IMs:**
Bane NOR: Rounding rule and measuring points differs from definition.
RFI: Rounding rule and measuring points differs from definition.
TRV: Measuring points differs from definition.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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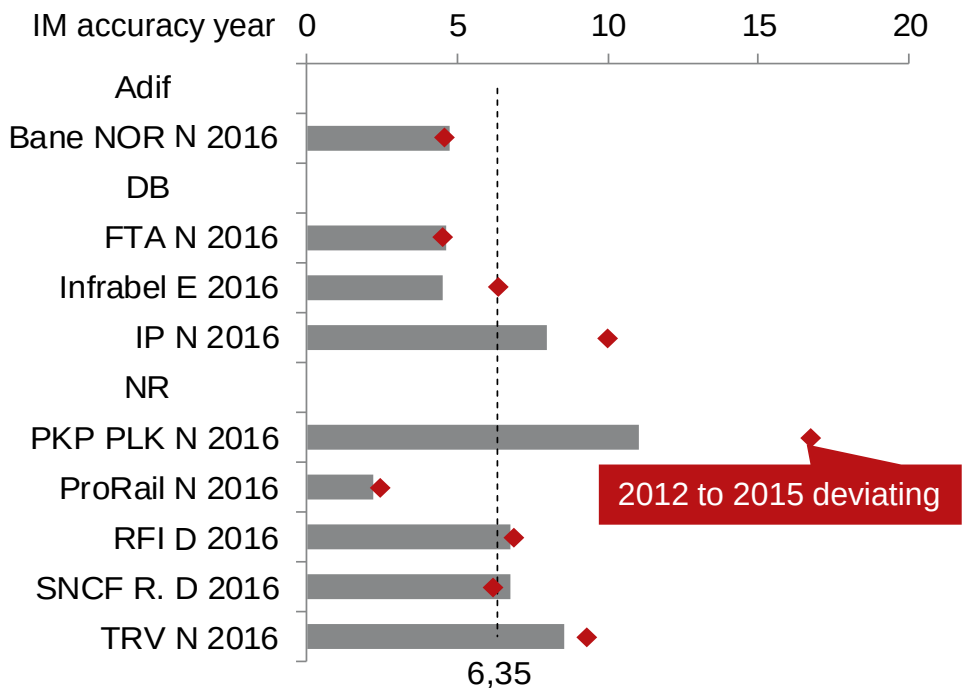
## Delay minutes per train-km caused by the IM

KPI 31

Minutes per thousand train-km




- The average of delays caused by IMs in the European railway network is about 6 minutes per train-km
- Delay causes include: Operational planning, Infrastructure installations, Civil engineering causes, other IMs responsibilities and others

**Comments from IMs:**
Infrabel: Shunting data not included in the train-km.
RFI: Rounding rule and measuring points differs from definition.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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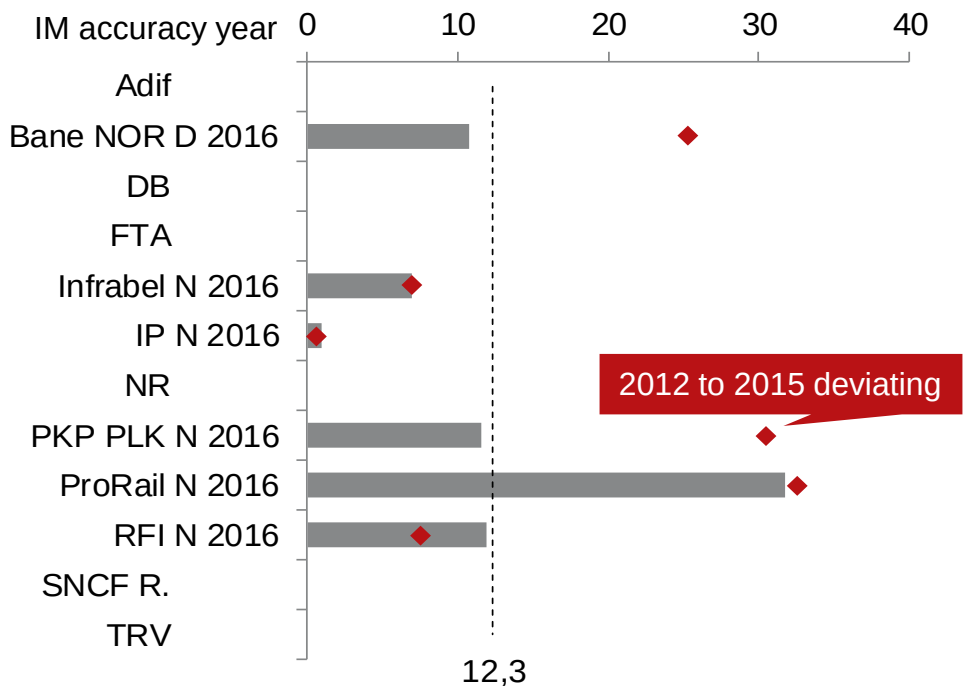
## Percentage of train cancellations caused by the IM

KPI 34

% of scheduled and cancelled passenger trains




- IMs cause an average of 12 percent of train cancellations

**Comments from IMs:**
Bane NOR: Include both passenger and freight trains.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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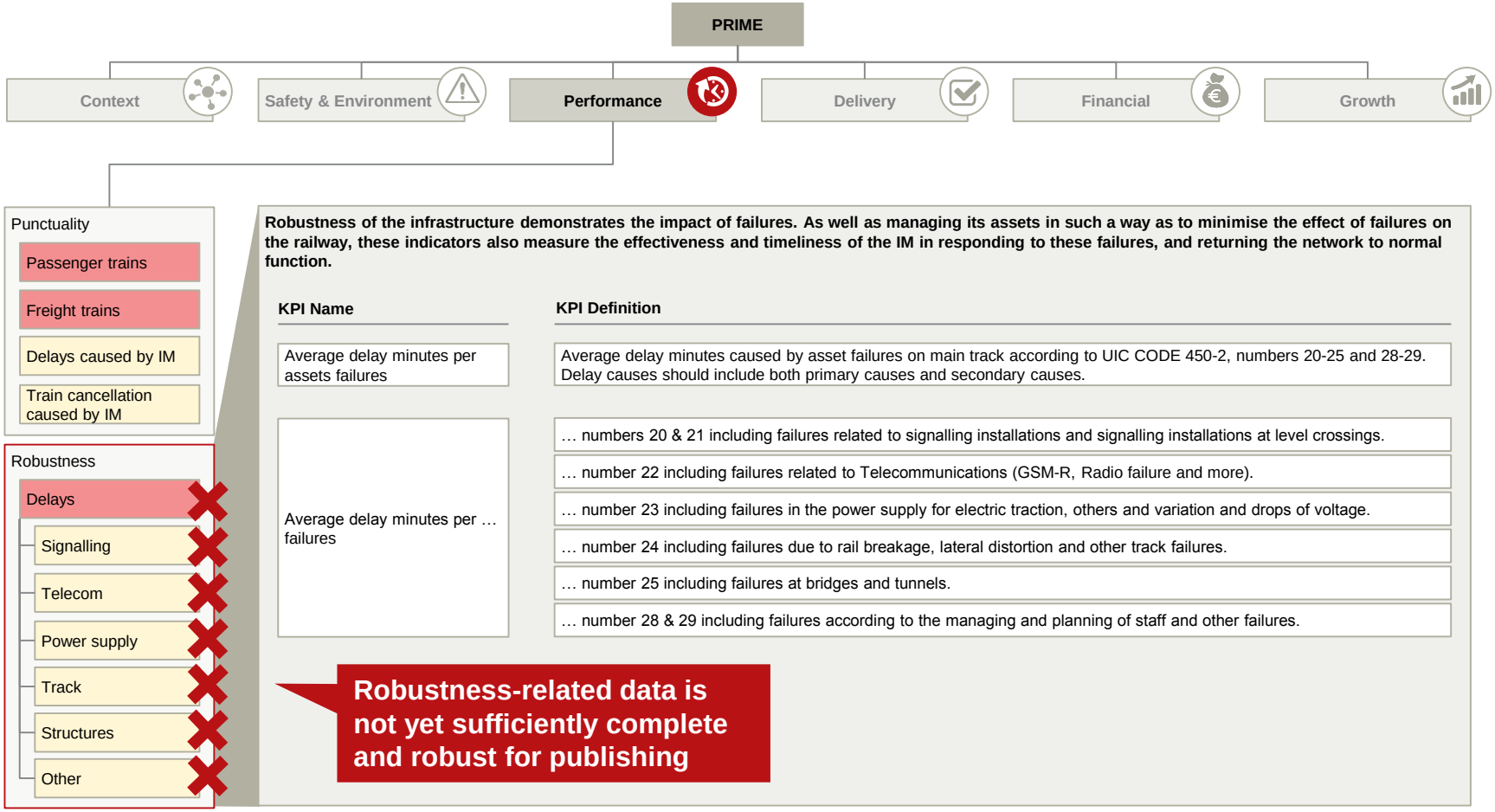
# Performance – Robustness – Overview



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - Context
    - Safety and environment
    - Performance
    - **Delivery**
    - Financial
    - Growth
  - Assessment of the current status of benchmarking

- Appendix




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# Aim is to describe the effectiveness of the IM's internal processes and management of the assets

## Delivery – objectives

- Deliver an available, operable and fully functional network, to the required level of capacity;
- Carry out its asset management functions effectively and in a timely manner; and
- Maintain and improve asset condition in line with its strategy.

Source: PRIME Catalogue Version 2.0, 25 September 2017



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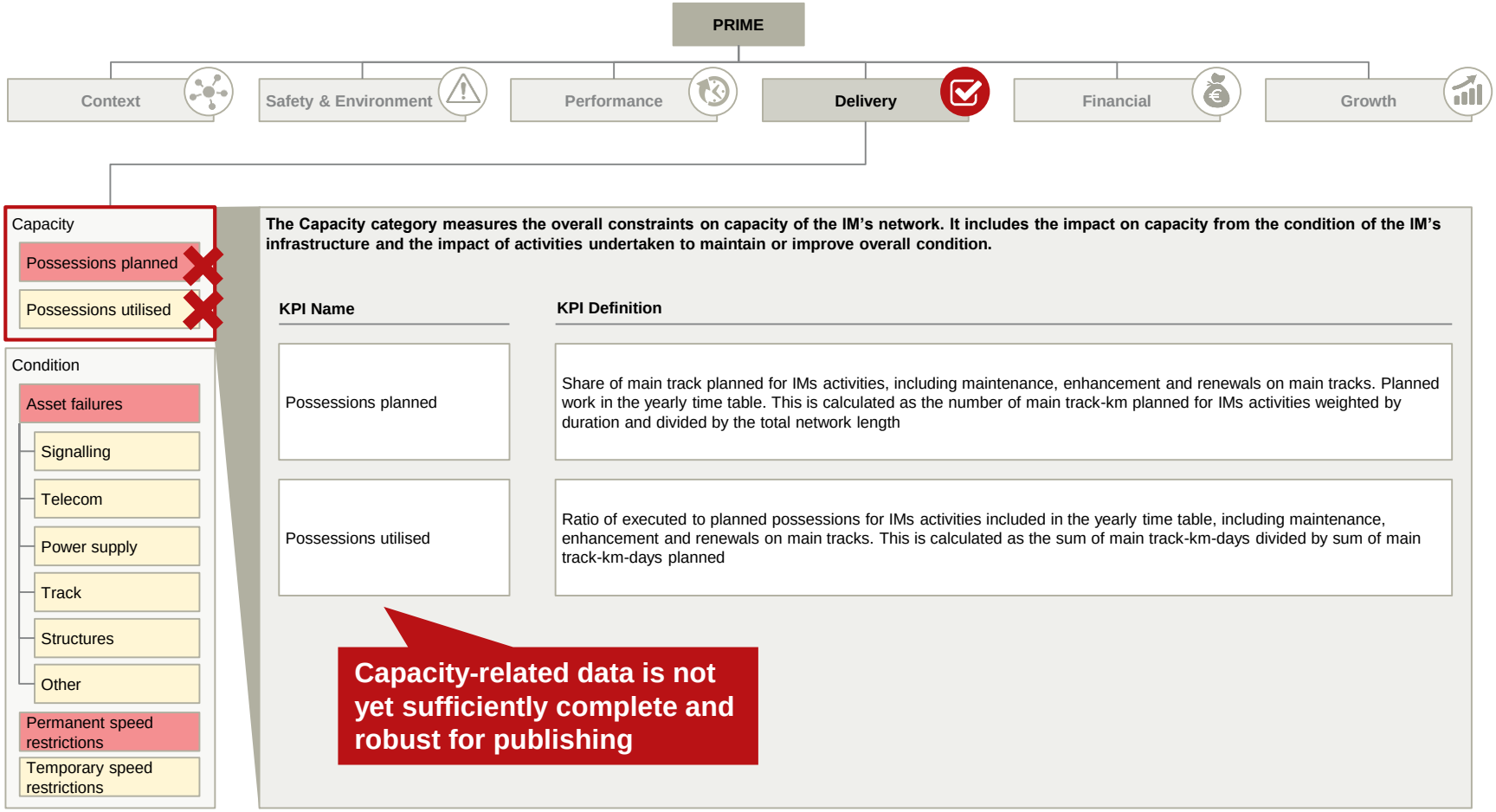
# Delivery – Capacity – Overview



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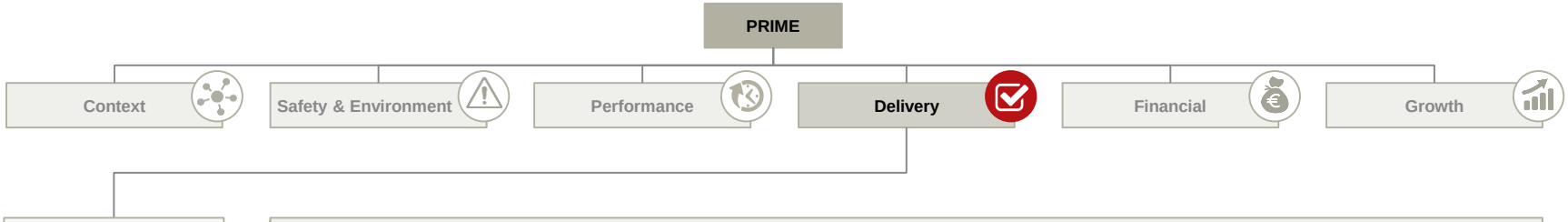
# Delivery – Condition – Overview




Capacity
- Possessions planned
- Possessions utilised

Condition
- Asset failures ✓
  - Signalling ✓
  - Telecom ✓
  - Power supply ✓
  - Track ✓
  - Structures ✓
  - Other ✓
- Permanent speed restrictions ✗
- Temporary speed restrictions ✓

**The measurement of asset condition is complex, and not always straight forward for a single IM, nevermind as a comparative metric for use in bench-marking. Therefore the PRIME condition category describes the condition of the asset primarily in terms of how well it functions (i.e. number of failures) and in terms of the impact of condition of the assets on the expected delivery of the network, in terms of temporary and permanent speed restrictions.**

| KPI Name | KPI Definition |
|---|---|
| Assets failures per thousand main track-km | Number of asset failures on main track according to UIC CODE 450-2, numbers 20-25 and 28-29 per thousand main track-km. |
| … failures per thousand main track-km | … numbers 20 & 21 … . Including failures related to signalling installations and signalling installations at level crossings. |
| | … number 22… . Including failures related to Telecommunications (GSM-R, Radio failure and more). |
| | … number 23 … . Including failures in the power supply for electric traction, others and variation and drops of voltage. |
| | … number 24 … . Including failures due to rail breakage, lateral distortion and other track failures. |
| | … number 25 … . Including failures at bridges and tunnels. |
| | … numbers 28 & 29 … . Failures according to the managing and planning of staff and other failures. |
| Tracks with permanent speed restrictions | Percentage of tracks with permanent speed restriction due to deteriorating asset condition weighted by the time the restrictions are in place (included in the yearly timetable), related to total main track-km |
| Tracks with temporary speed restrictions | Percentage of tracks with temporary speed restriction due to deteriorating asset condition weighted by the time the restrictions are in place (not included in the yearly timetable), related to total main track-km |

High Level Industry KPI  Benchmarking KPI



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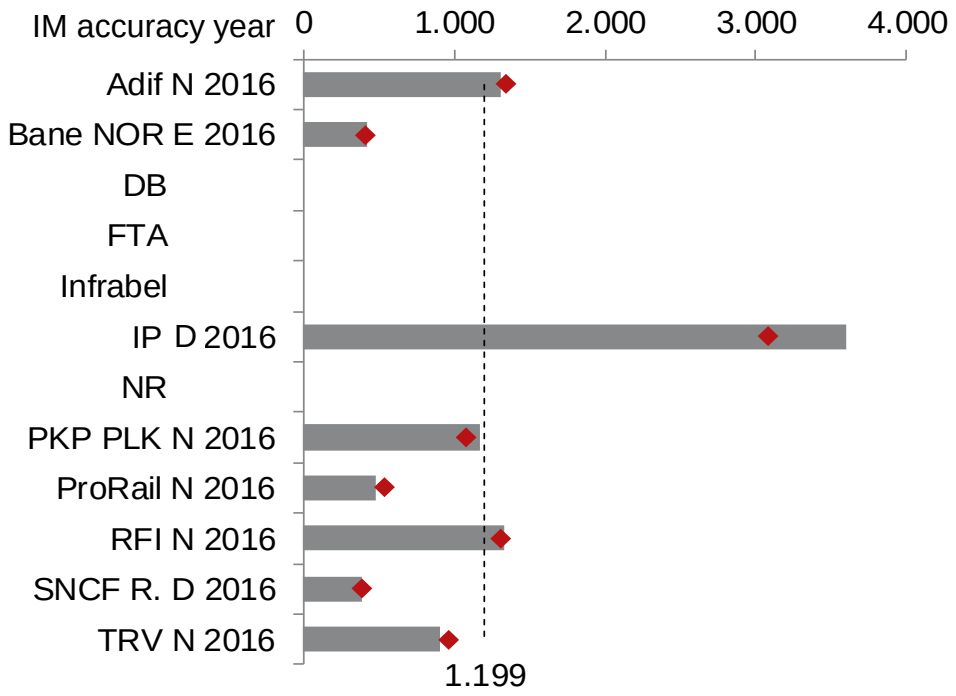
## Asset failures in relation to network size

KPI 51

Number per thousand main track-km




- On average around 1.200 assets are failing per thousand main track-km and year

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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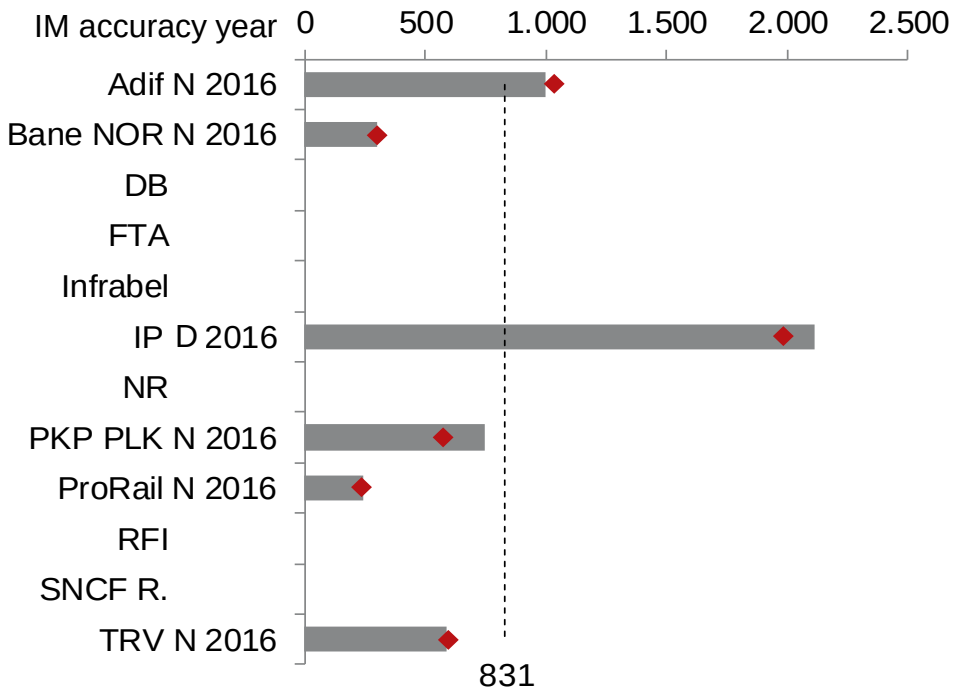
## Signalling failures in relation to network size

KPI 52

Number per thousand main track-km




- Average failure frequency for signalling assets is about 800 per thousand main track-km and year and appears to be relatively constant over time

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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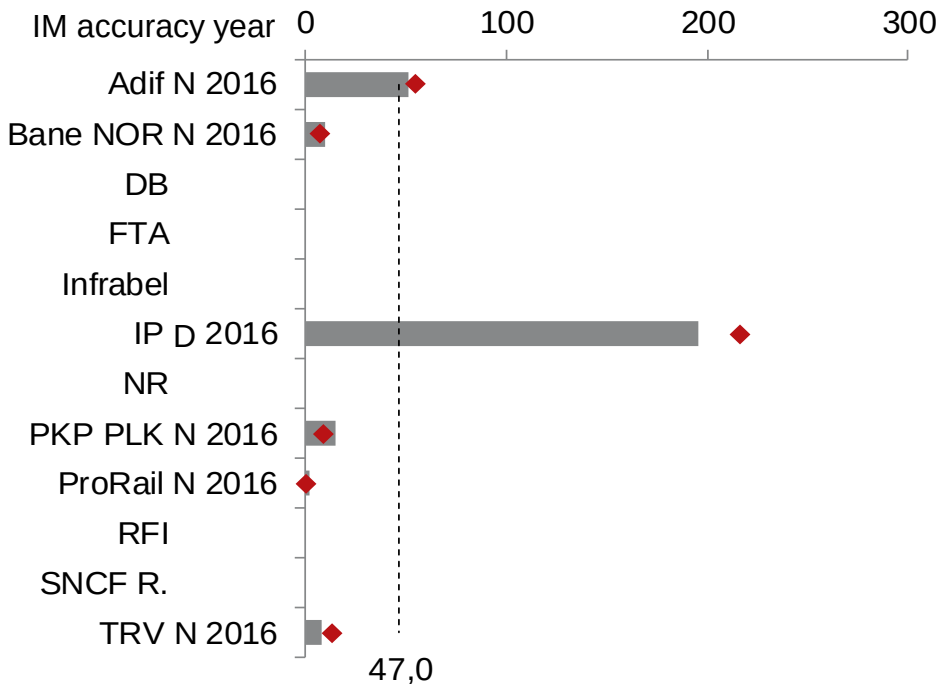
## Telecommunication failures in relation to network size

KPI 53

Number per thousand main track-km




- Average failure frequency for telecommunication assets is 47 per thousand main track-km and year

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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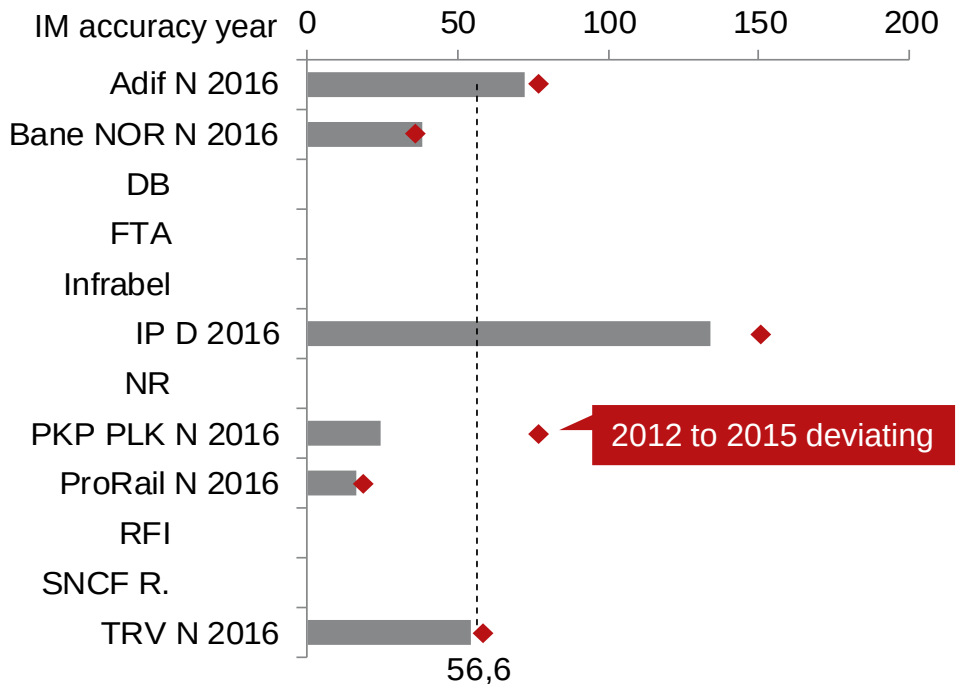
## Power supply failures in relation to network size

KPI 54

Number per thousand main track-km




- Average failure frequency for power supply assets is 57 per thousand main track-km and year and seem to be decreasing

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
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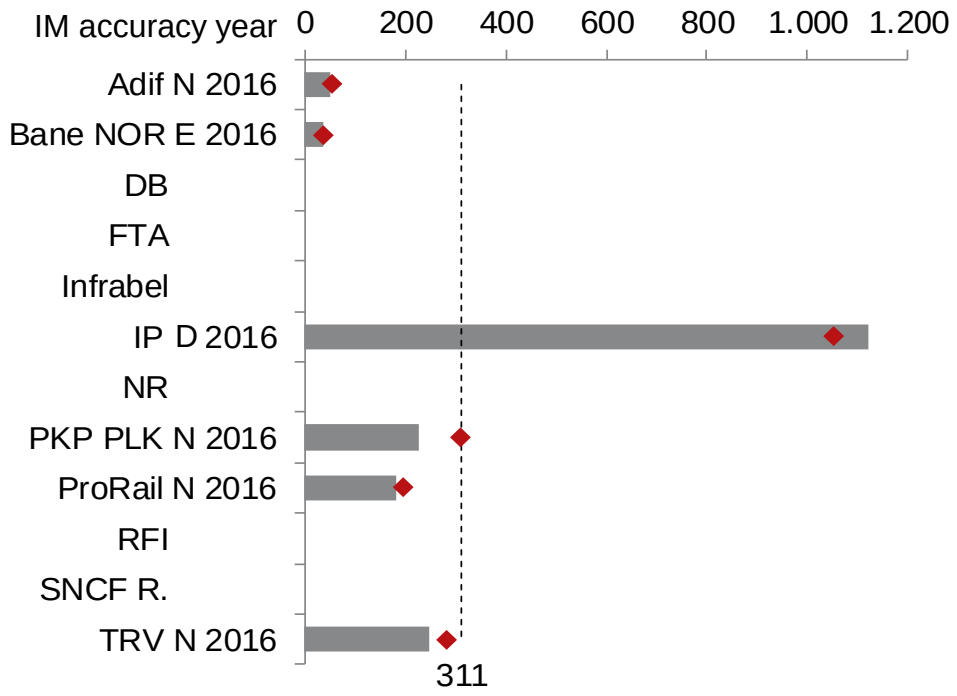
## Track failures in relation to network size

KPI 55

Number per thousand main track-km




- Average failure frequency for track assets is about 300 per thousand main track-km and year

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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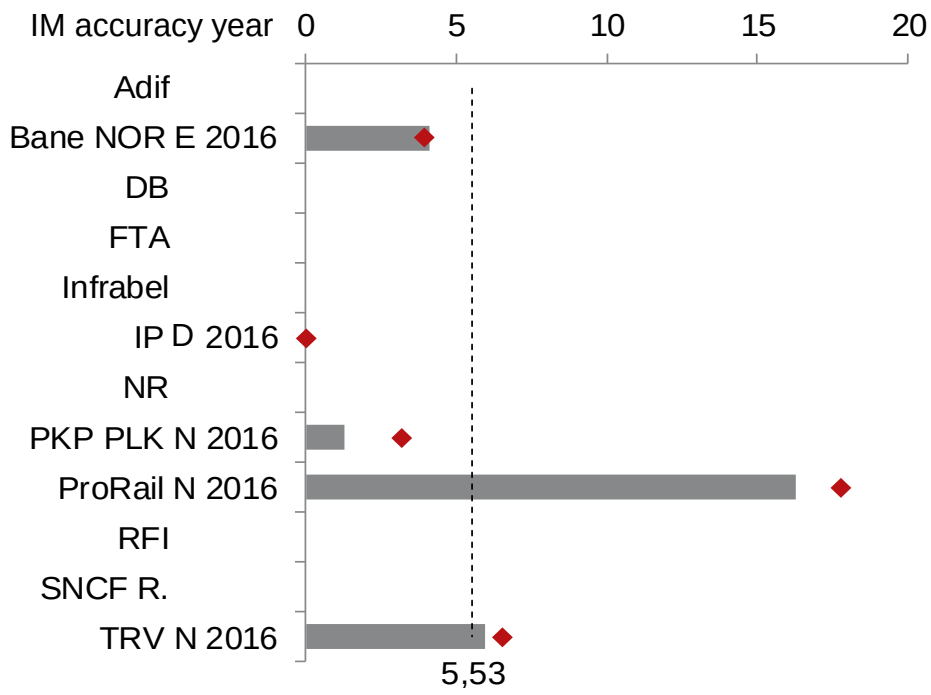
## Structure failures in relation to network size

KPI 56

Number per thousand main track-km




- Average failure frequency for structures is 5,5 per thousand main track-km and year

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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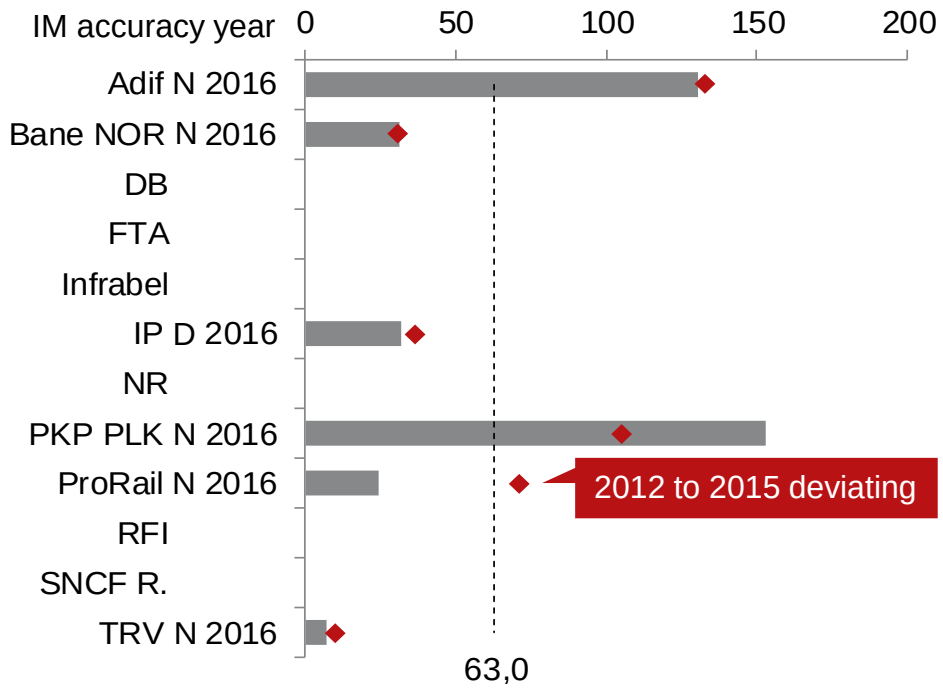
## Other infrastructure failures in relation to network size

KPI 57

Number per thousand main track-km




- Average failure frequency for other assets is 63 per thousand main track-km and year

**Comments from IMs:**
IP: All failures included even those not affecting trains/causing delays.

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year
Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary
Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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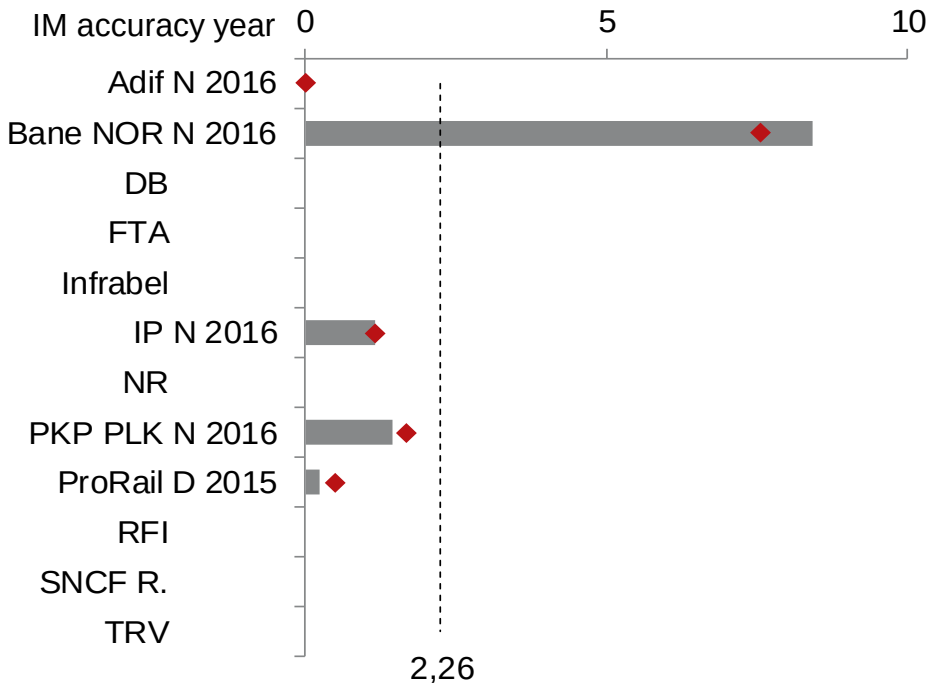
# Tracks with temporary speed restrictions

KPI 59

% of main track-km




- On average, 2% of the main track has temporary speed restrictions due to deteriorating condition

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - Context
    - Safety and environment
    - Performance
    - Delivery
    - **Financial**
    - Growth
  - Assessment of the current status of benchmarking

- Appendix




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# This dimension is intended to provide understanding of the structure and the level of costs and revenues

## Financial – objectives

- Support delivery of a cost-effective railway, through identification and implementation of good practices and processes;
- Identify and encourage opportunities to increase revenues from all sources;
- Understand the impact of charging and charges on IM and the whole railway industry; and
- Support making the case for appropriate and effective investment in the railway.

Source: PRIME Catalogue Version 2.0, 25 September 2017



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# All financial data have been adjusted for purchasing power and converted into Euro using purchasing power parities

## PPPs[1)]

| | Purchasing power parity (LCU/EUR) | | | | |
|---|---|---|---|---|---|
| **Country** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Belgium** | 1,0979 | 1,1050 | 1,1037 | 1,0821 | 1,1000 |
| **Switzerland** | 1,7900 | 1,7900 | 1,7500 | 1,6700 | 1,6900 |
| **Germany** | 1,0387 | 1,0532 | 1,0429 | 1,0318 | 1,0600 |
| **Spain** | 0,9145 | 0,9126 | 0,8952 | 0,8852 | 0,9000 |
| **Finland** | 1,2066 | 1,2370 | 1,2412 | 1,2217 | 1,2400 |
| **France** | 1,1218 | 1,1095 | 1,1005 | 1,0809 | 1,1000 |
| **Great Britain** | 0,9200 | 0,9373 | 0,9398 | 0,9090 | 0,9500 |
| **Italy** | 0,9979 | 1,0108 | 1,0061 | 0,9838 | 0,9900 |
| **Lithuania** | 0,6027 | 0,6042 | 0,6033 | 0,6047 | 0,6200 |
| **Latvia** | 0,6711 | 0,6793 | 0,6750 | 0,6657 | 0,6700 |
| **Netherlands** | 1,0961 | 1,0944 | 1,0945 | 1,0900 | 1,1000 |
| **Norway** | 11,9451 | 12,2606 | 12,5583 | 12,8648 | 13,7100 |
| **Poland** | 2,3978 | 2,4087 | 2,4060 | 2,3647 | 2,4000 |
| **Portugal** | 0,7806 | 0,7899 | 0,7792 | 0,7785 | 0,8000 |
| **Sweden** | 11,5182 | 11,8062 | 11,9888 | 11,9867 | 12,2800 |

1) Data provided by European Commission



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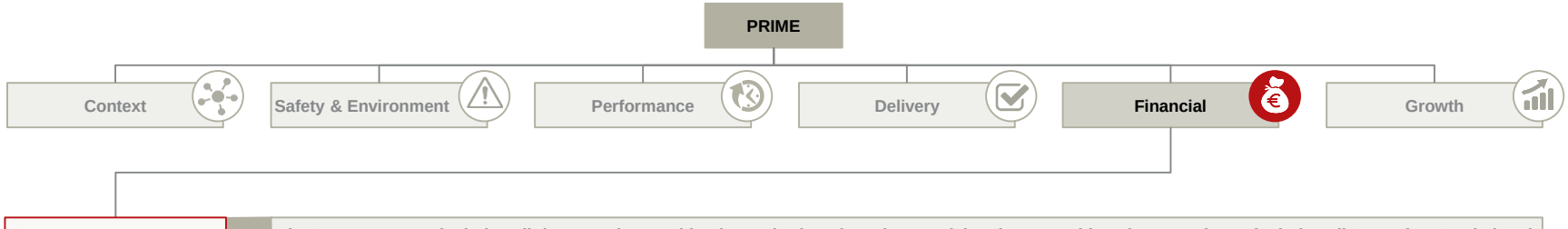
# Financial – Costs – Overview




Costs
- OPEX
  - Maintenance
  - Traffic management
- CAPEX
  - Renewals

Revenues
- Non access charges
- Track access charges
  - Proportion
- Incentive regimes

**The Costs category includes all the costs incurred by the IM, broken down into useful and comparable sub-categories. It includes all Operating, Capital and Investment costs. For purposes of comparison, costs will be adjusted where appropriate to reflect local costs using purchasing power parities (PPPs). The costs incurred by an IM will be dependent on a number of factors: some within and some outside the management responsibility of the IM.**

| KPI Name | KPI Definition |
|---|---|
| OPEX – operational expenditures in relation to network size | Total IMs annual operational expenditures per main track-km |
| Maintenance expenditures in relation to network size | Total IMs annual maintenance expenditures per main track-km |
| Traffic management expenditures in relation to network size | Total IMs annual traffic management expenditures per main track-km |
| CAPEX – capital expenditures in relation to network size | Total IMs annual capital expenditures per main track-km |
| Renewal expenditures in relation to network size | Total IMs annual renewal expenditures per main track-km |

High Level Industry KPI  Benchmarking KPI



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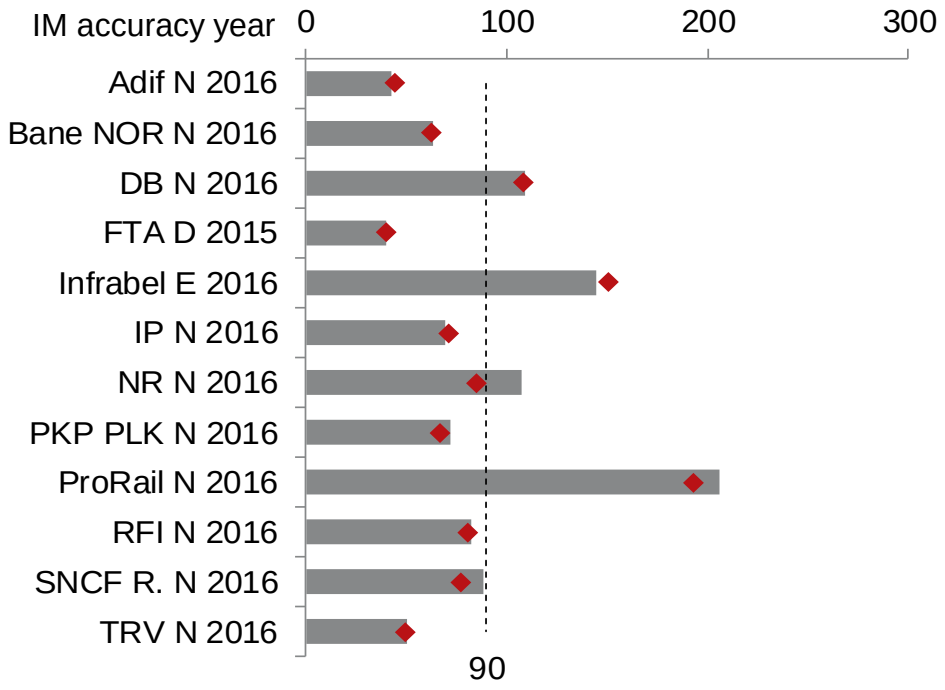
# OPEX – operational expenditures in relation to network size[1)]

KPI 60

1.000 Euro per main track-km




- Average annual operational expenditures are 90.000 Euros per main track-kilometre
- For a meaningful gap analysis, major cost drivers should be taken into account such as network characteristics, utilisation and traffic management technologies

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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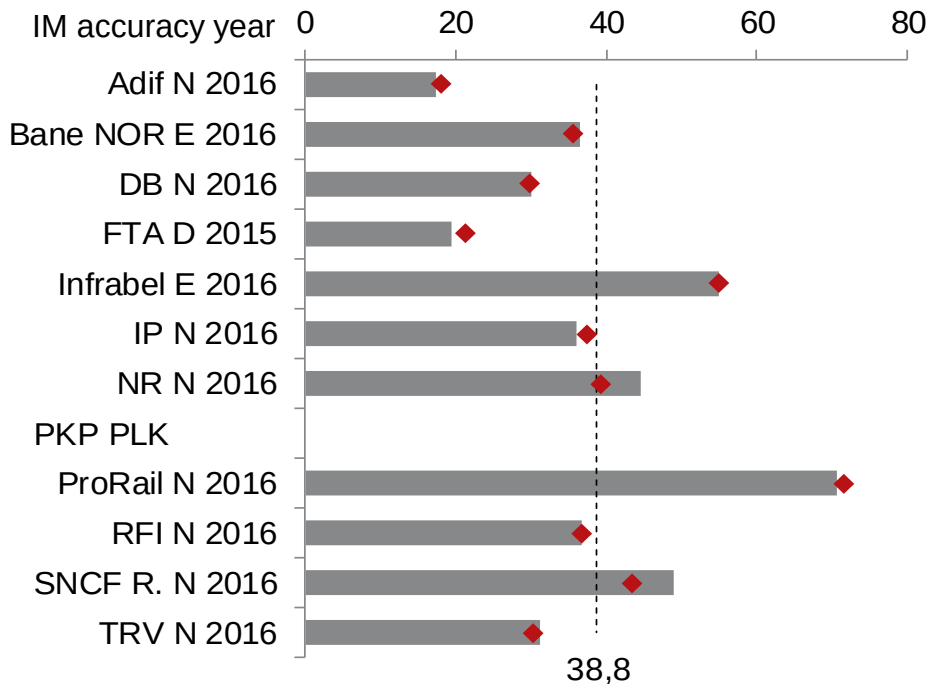
## Maintenance expenditures in relation to network size[1)]

KPI 62

1.000 Euro per main track-km




- Average annual maintenance expenditures are 38.800 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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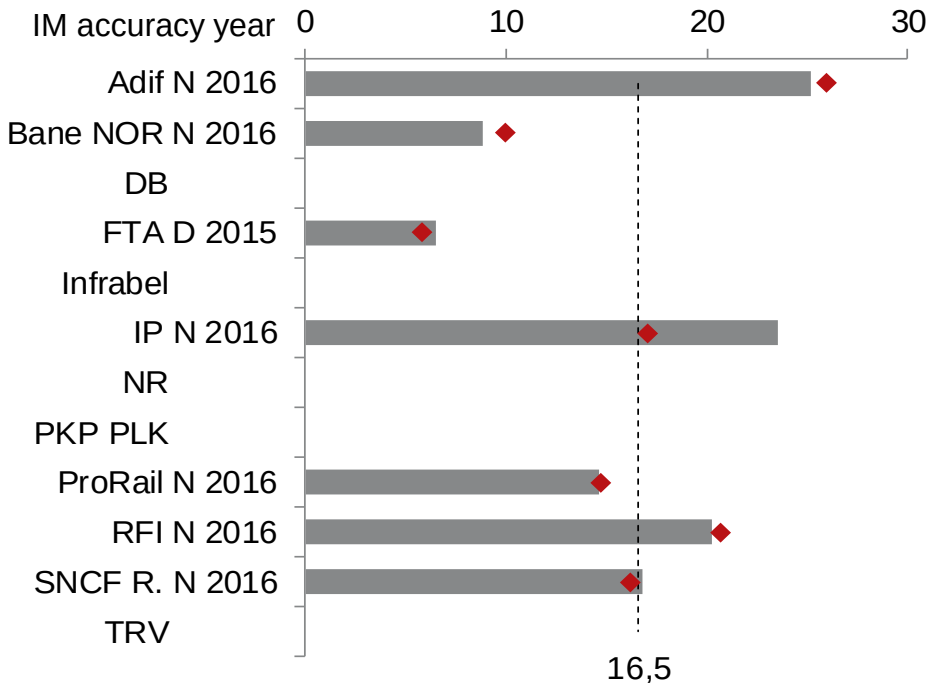
## Traffic management expenditures in relation to network size[1)]

KPI 64

1.000 Euro per main track-km




- Average annual expenditures for traffic management are 16.500 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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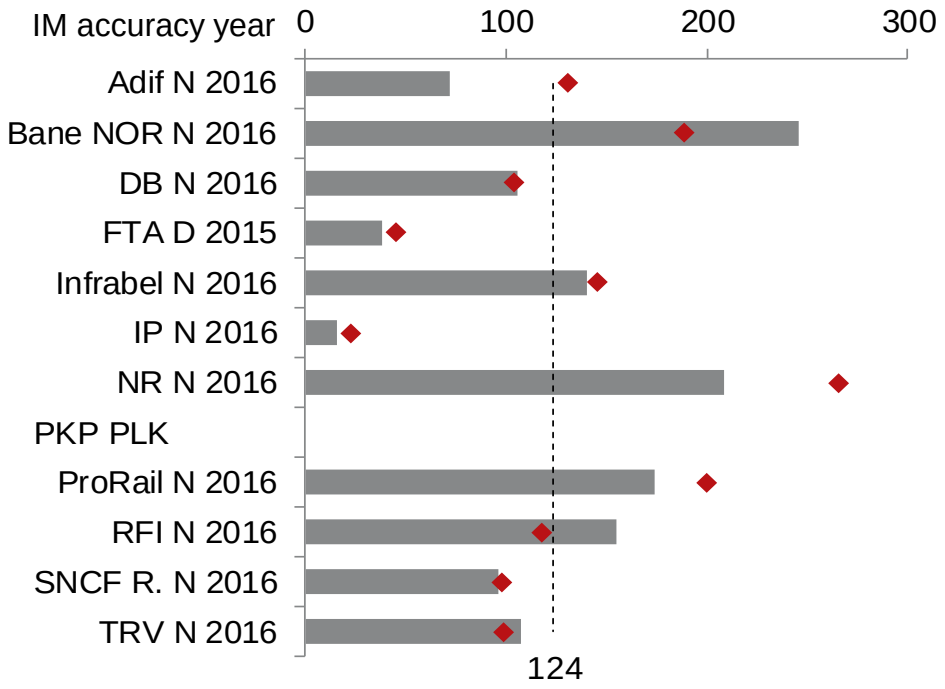
## CAPEX – capital expenditures in relation to network size[1)]

KPI 66

1.000 Euro per main track-km




- Average annual capital expenditures are 124.000 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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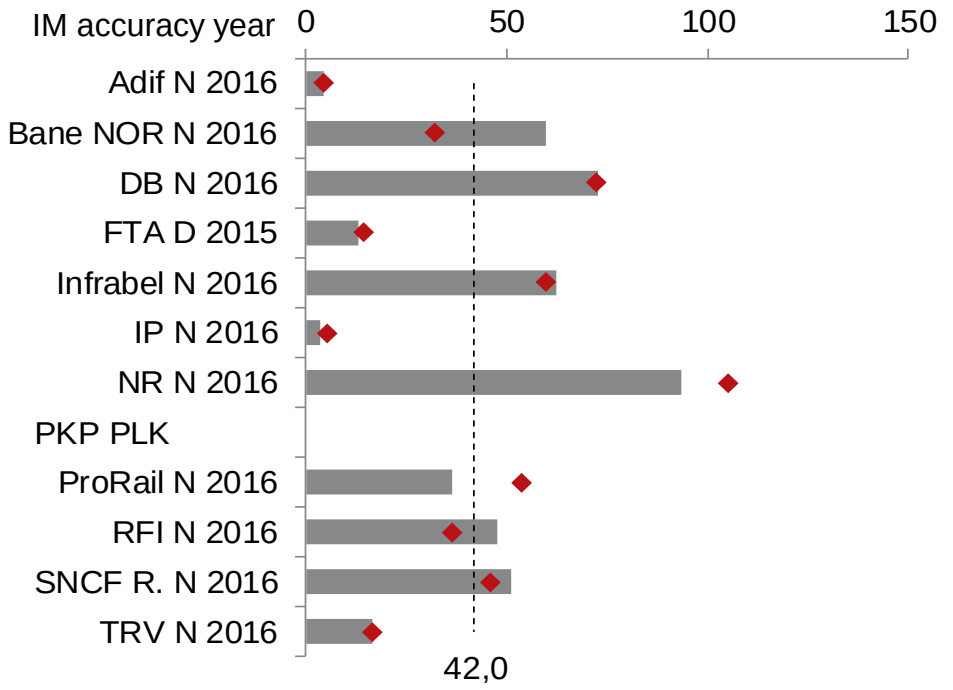
## Renewal expenditures in relation to network size[1)]

KPI 68

1.000 Euro per main track-km




- Average annual renewal expenditures are 42.000 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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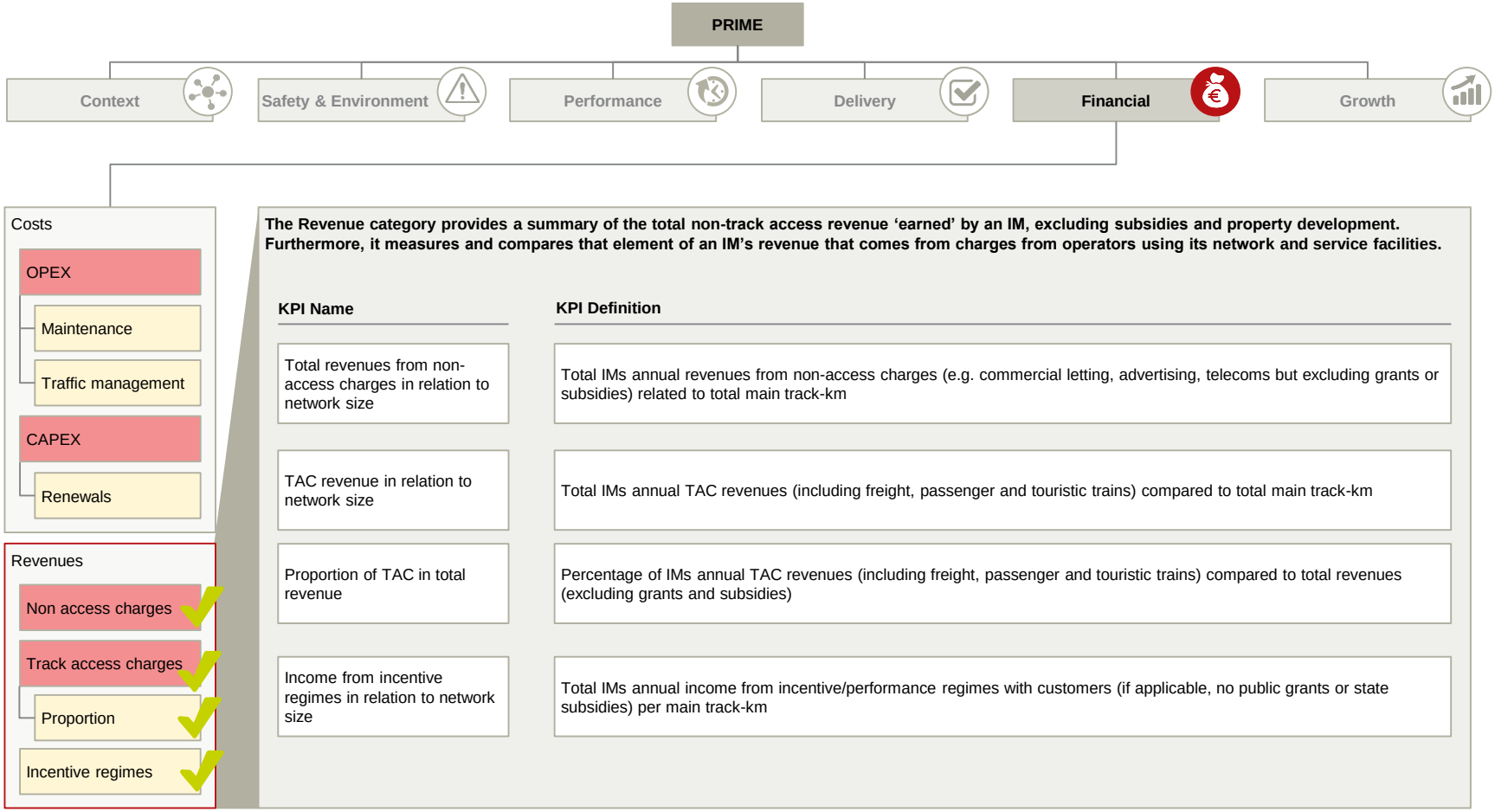
# Financial – Revenues – Overview




**The Revenue category provides a summary of the total non-track access revenue 'earned' by an IM, excluding subsidies and property development. Furthermore, it measures and compares that element of an IM's revenue that comes from charges from operators using its network and service facilities.**

| KPI Name | KPI Definition |
|---|---|
| Total revenues from non-access charges in relation to network size | Total IMs annual revenues from non-access charges (e.g. commercial letting, advertising, telecoms but excluding grants or subsidies) related to total main track-km |
| TAC revenue in relation to network size | Total IMs annual TAC revenues (including freight, passenger and touristic trains) compared to total main track-km |
| Proportion of TAC in total revenue | Percentage of IMs annual TAC revenues (including freight, passenger and touristic trains) compared to total revenues (excluding grants and subsidies) |
| Income from incentive regimes in relation to network size | Total IMs annual income from incentive/performance regimes with customers (if applicable, no public grants or state subsidies) per main track-km |

High Level Industry KPI  Benchmarking KPI



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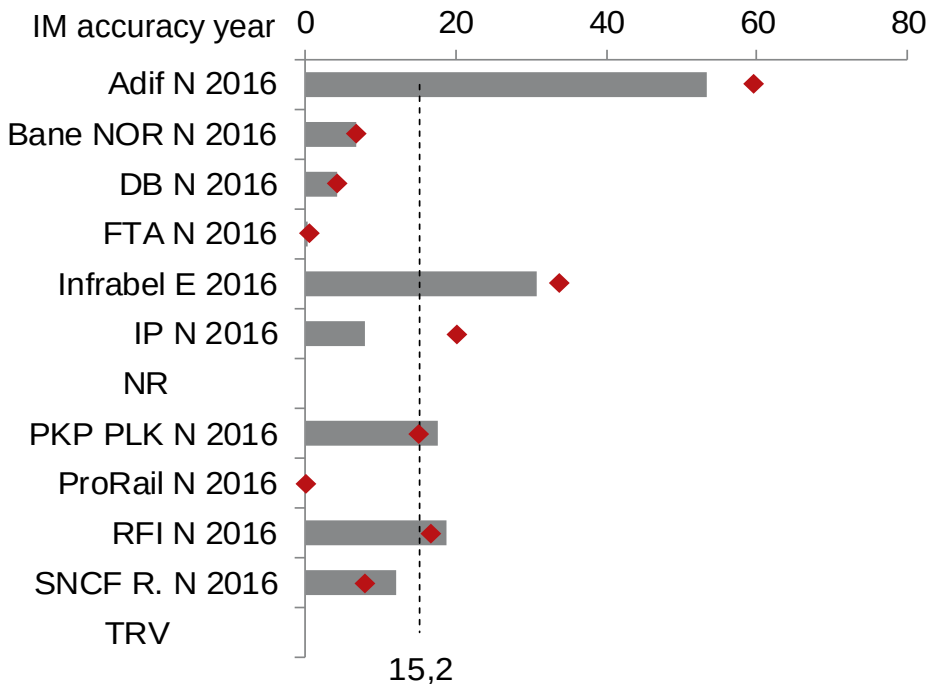
## Total revenues from non-access charges in relation to network size[1)]

KPI 80

1.000 Euro per main track-km




- Average annual revenues from non-access charges are 15.200 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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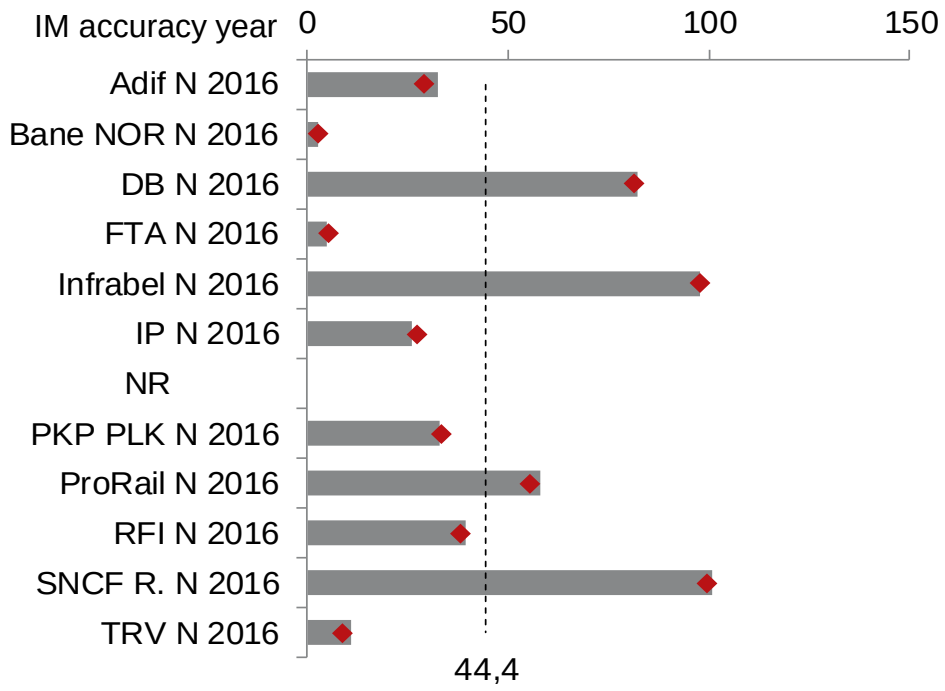
## TAC revenue in relation to network size[1)]

KPI 87

1.000 Euro per main track-km




- Average annual revenues from track access charges are 44.400 Euros per main track-kilometre

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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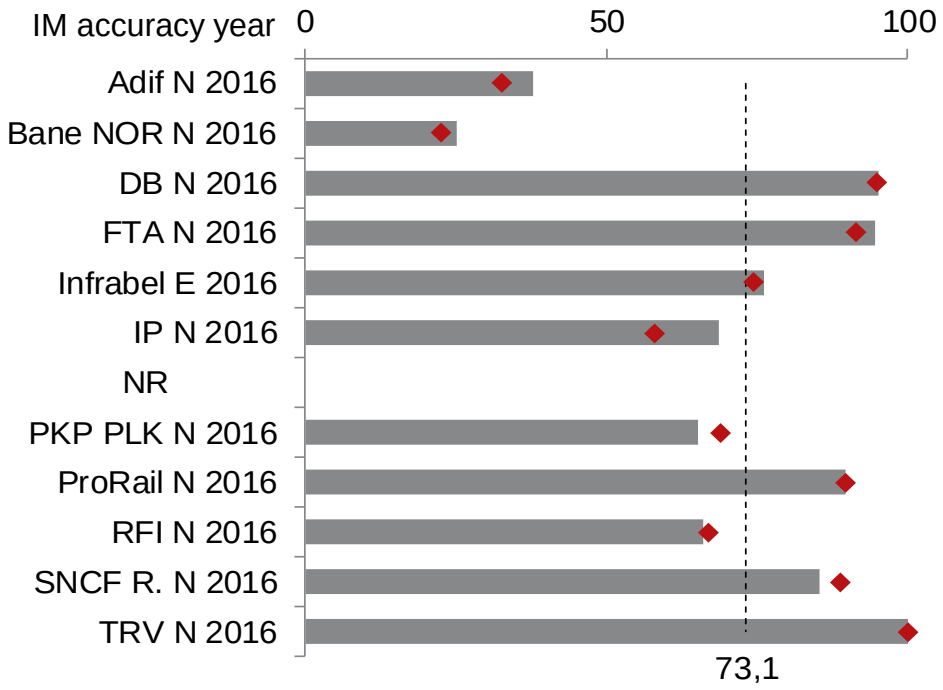
## Proportion of TAC in total revenue

KPI 81

% of monetary value




- Track access charges account for nearly 75% of the total revenues on average

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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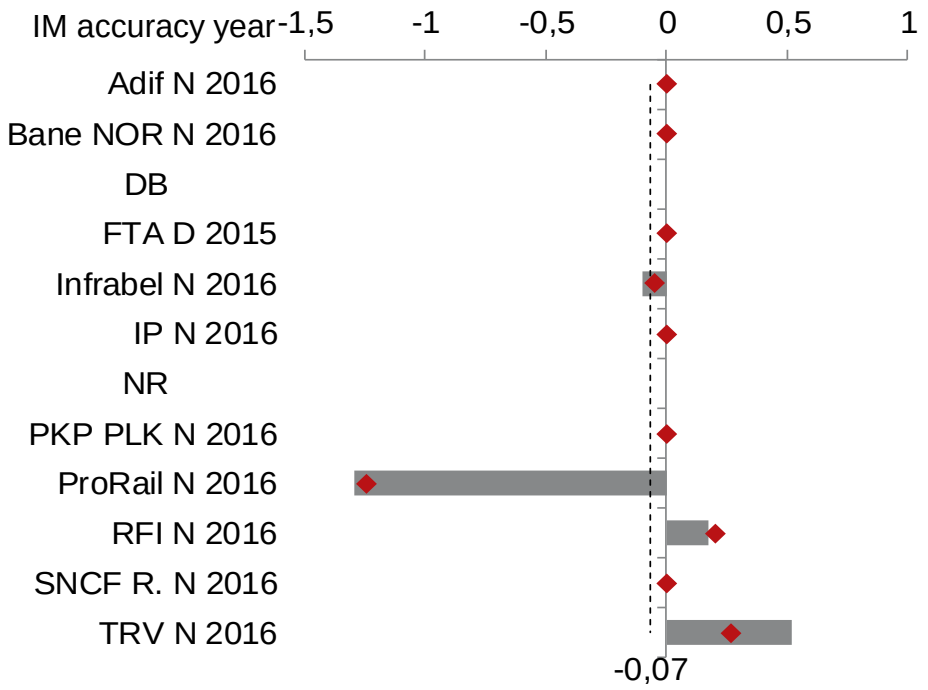
## Income from incentive regimes in relation to network size[1)]

KPI 91

1.000 Euro per main track-km




- The average annual "income" from incentives is rather a malus payment of 70 Euros per main track-km

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

1) Results are normalised for purchasing power parity

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - **KPI results**
    - Context
    - Safety and environment
    - Performance
    - Delivery
    - Financial
    - **Growth**
  - Assessment of the current status of benchmarking

- Appendix




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# Aim is to describe the current / future network use / technology, and integration with other transport modes

## Growth – objectives

- Improve the use of the overall capacity of the railway network;
- Encourage modal shift to rail from road and air;
- Promote multi-modal transport integration;
- Understand and use new technology, such as ERTMS, effectively and efficiently to support the objectives of the IM and the integrated railway.

Source: PRIME Catalogue Version 2.0, 25 September 2017



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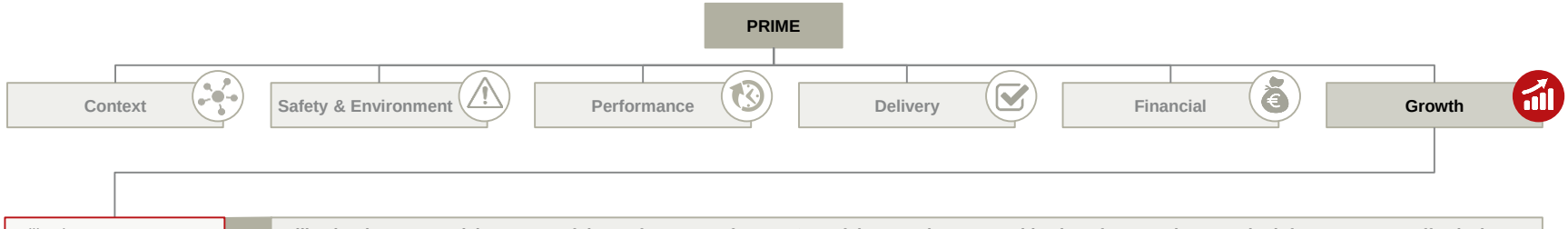
# Growth – Utilisation – Overview




Utilisation
- Train-km
- Passenger trains
- Freight trains

Asset Capability & ERTMS
- Deployment today
- Deployment 2030

Intermodality
- Intermodal stations
- Passengers at accessible stations

**Utilisation is an essential measure of the performance of an IM. One of the most important objectives for an IM is to use its infrastructure as effectively as possible. This measure also distinguishes between passenger and freight traffic. Utilisation has a major impact on the ability of an IM to cover its costs and the utilisation of the infrastructure will also affect the future performance (other KPIs) of the infrastructure, e.g. overall condition.**

| KPI Name | KPI Definition |
|---|---|
| Degree of utilisation – all trains | Average daily train-km on main track (passenger and freight revenue service only, no shunting, no work trains) related to main track-km |
| Degree of utilisation – passenger trains | Average daily passenger train-km on main track (revenue service only, no shunting, no work trains) related to main track-km |
| Degree of utilisation – freight trains | Average daily freight train-km on main track (revenue service only, no shunting, no work trains) related to main track-km |

High Level Industry KPI  Benchmarking KPI



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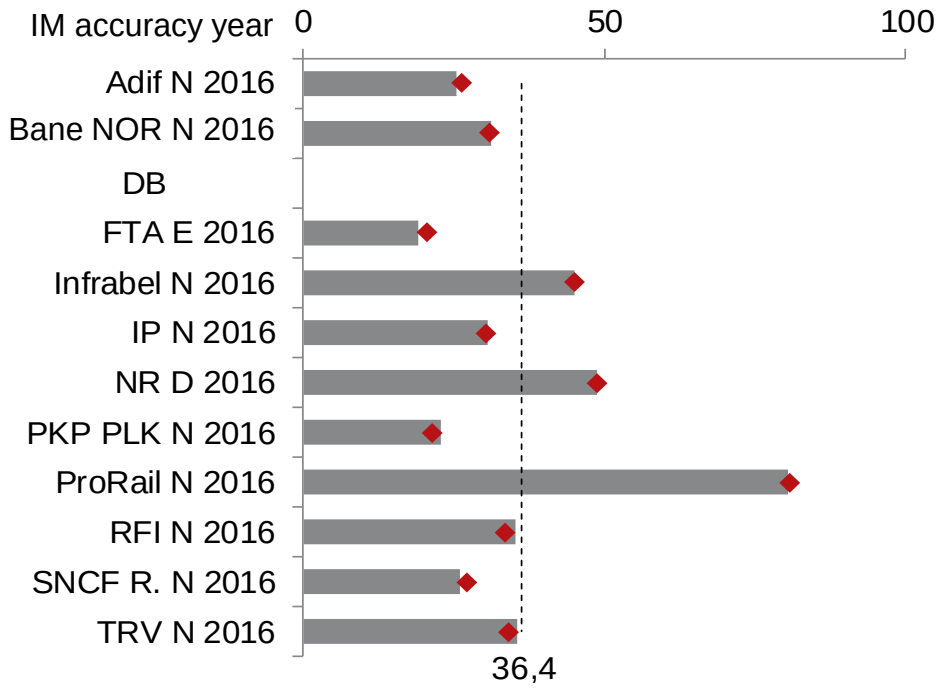
# Degree of network utilisation – all trains

KPI 92

Daily train-km per main track-km




- The utilisation of European railway networks varies widely. On average 36 trains per main track-km (passenger and freight) are running daily on European railway network

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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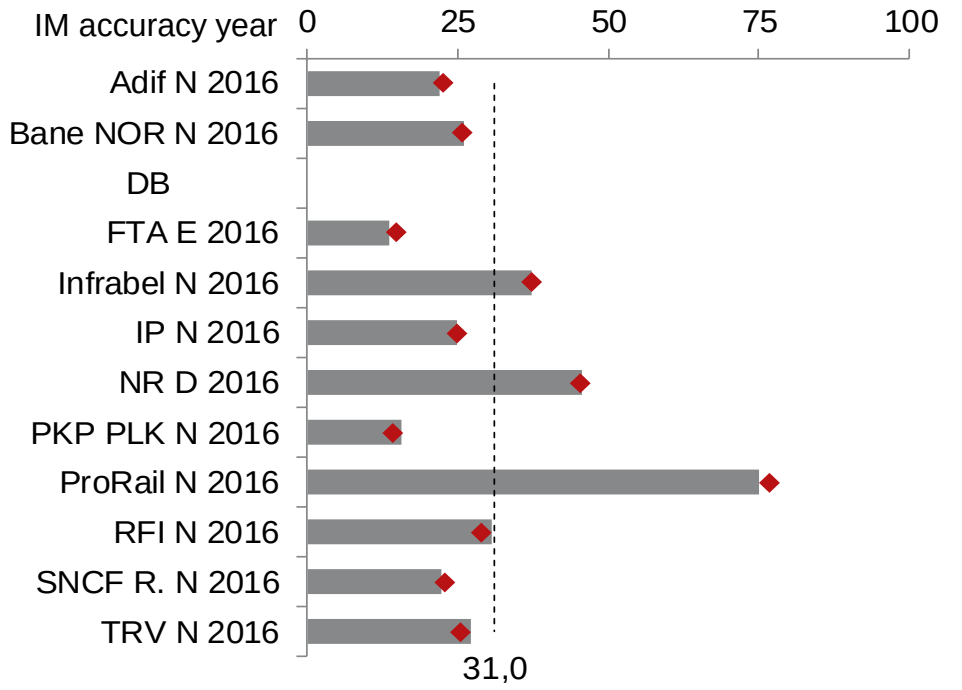
# Degree of network utilisation – passenger trains

KPI 93

Daily passenger train-km per main track-km




- On average 31 passenger trains per main track-km are running daily on European railway tracks

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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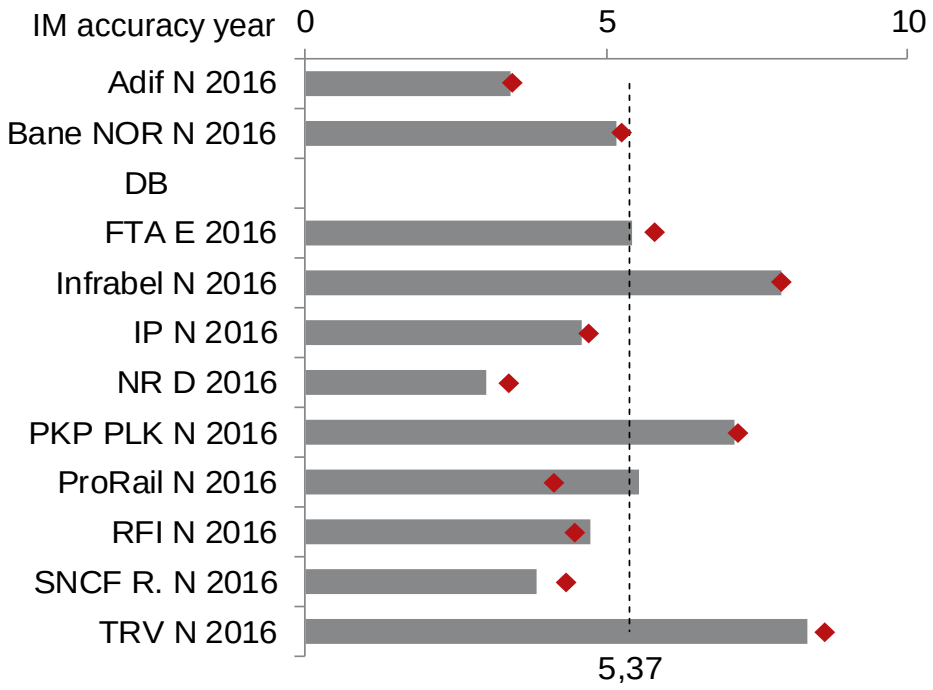
## Degree of network utilisation – freight trains

KPI 94

Daily freight train-km per main track-km




- On average 5 freight trains per main track-km are running daily on European railway tracks

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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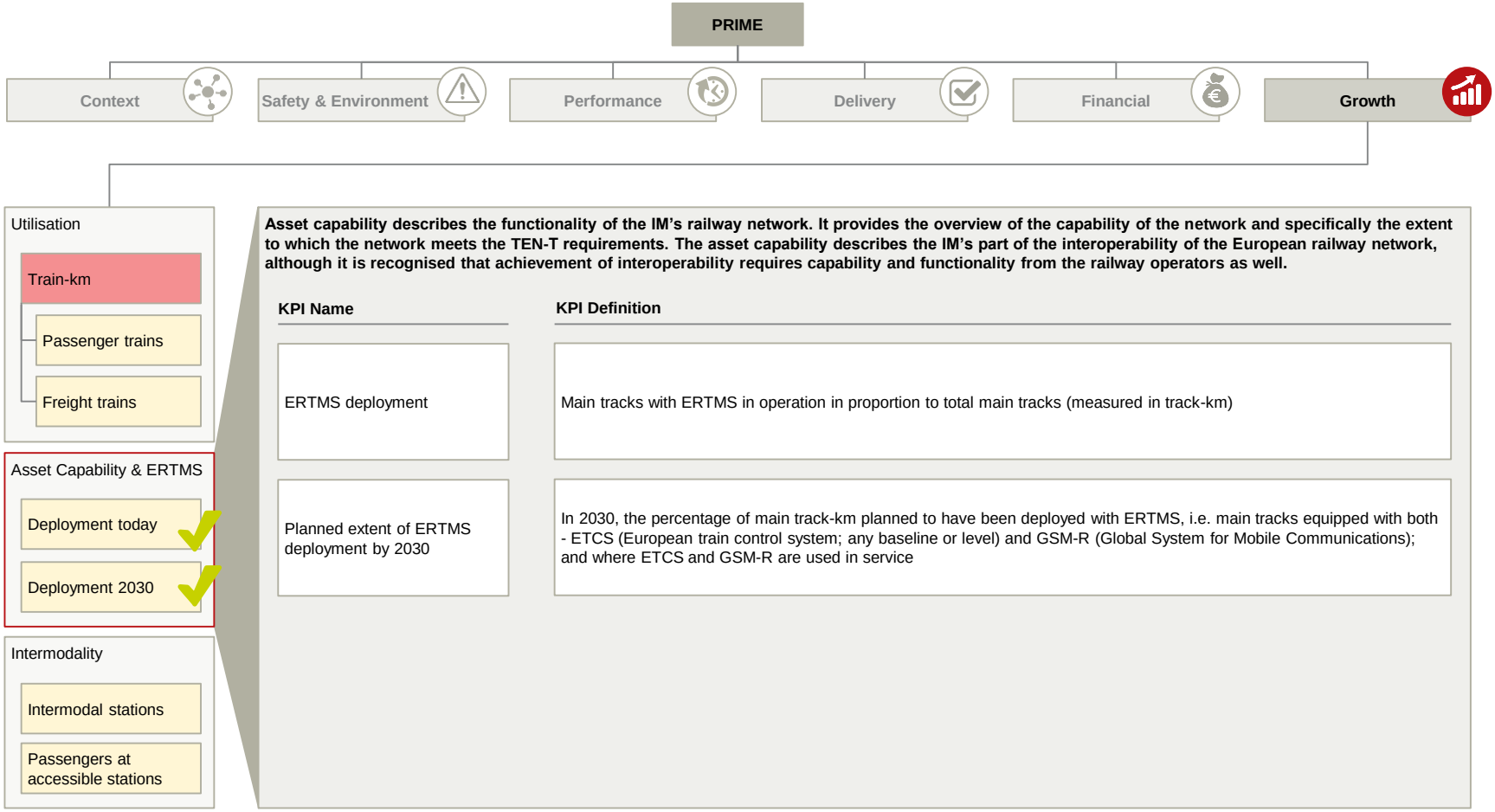
# Growth – Asset Capability & ERTMS – Overview




**Asset capability describes the functionality of the IM's railway network. It provides the overview of the capability of the network and specifically the extent to which the network meets the TEN-T requirements. The asset capability describes the IM's part of the interoperability of the European railway network, although it is recognised that achievement of interoperability requires capability and functionality from the railway operators as well.**

| KPI Name | KPI Definition |
|---|---|
| ERTMS deployment | Main tracks with ERTMS in operation in proportion to total main tracks (measured in track-km) |
| Planned extent of ERTMS deployment by 2030 | In 2030, the percentage of main track-km planned to have been deployed with ERTMS, i.e. main tracks equipped with both - ETCS (European train control system; any baseline or level) and GSM-R (Global System for Mobile Communications); and where ETCS and GSM-R are used in service |

High Level Industry KPI  Benchmarking KPI



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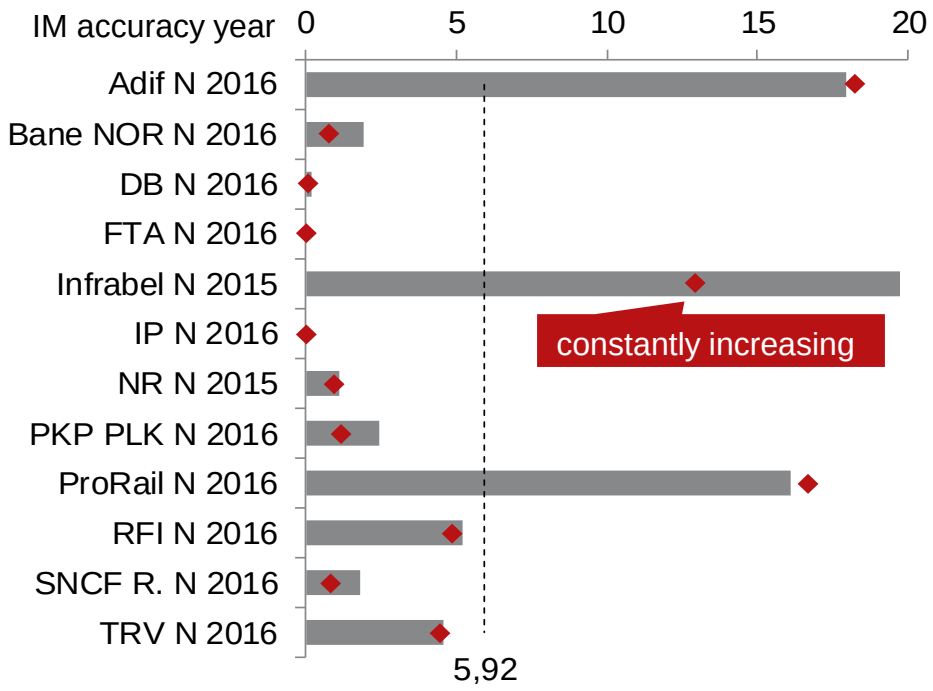
# ERTMS deployment

KPI 98

% of main track-km




- The degree of installation of ERTMS in the reporting IMs is covering 6% of their total network

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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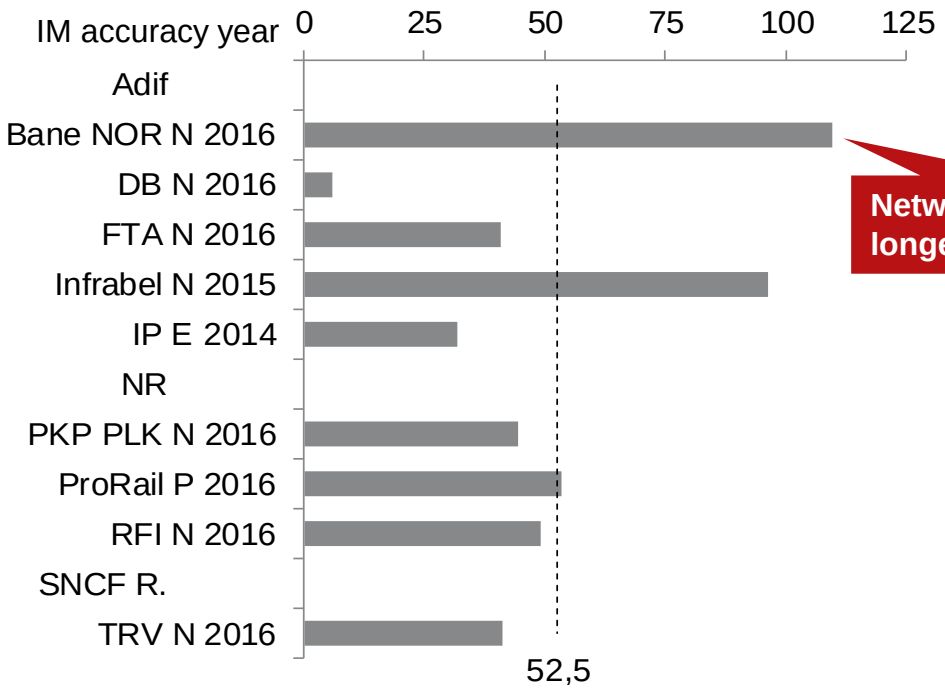
## Planned extent of ERTMS deployment by 2030

KPI 101

% of current main track-km




- By 2030 ETCS is expected to be rolled out in half of the railway network of reporting IMs

**Network in 2030 will be longer than today**

Latest available year ◆ Average of available years 2012-2016 ----- Total average latest available year

Data accuracy: N = Normal E = Estimate D = Deviating from definition P = Preliminary

Source: civity calculations using data as provided by the infrastructure managers until 13 April 2018



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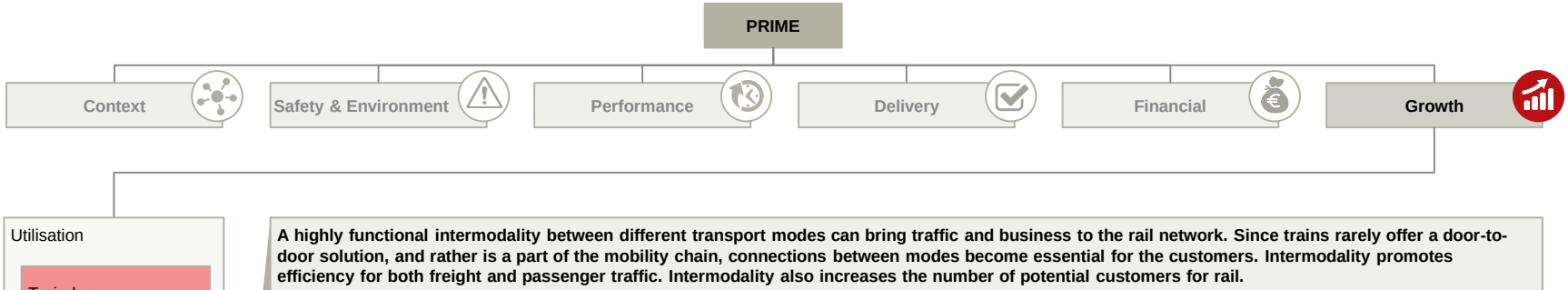
# Growth – Intermodality – Overview




Utilisation

- Train-km
  - Passenger trains
  - Freight trains

Asset Capability & ERTMS

- Deployment today
- Deployment 2030

Intermodality

- Intermodal stations ✗
- Passengers at accessible stations ✗

**A highly functional intermodality between different transport modes can bring traffic and business to the rail network. Since trains rarely offer a door-to-door solution, and rather is a part of the mobility chain, connections between modes become essential for the customers. Intermodality promotes efficiency for both freight and passenger traffic. Intermodality also increases the number of potential customers for rail.**

| KPI Name | KPI Definition |
|---|---|
| Intermodal stations | Percentage of public passenger railway stations with connections to public urban transport (metro, bus, tramways, light rail, ferries etc.…) within the entire railway infrastructure network, independent of ownership (Source "Passenger stations": European Commission, RMMS) |
| Passengers using accessible stations | Percentage of passengers registered annually in all accessible stations within the entire railway infrastructure network, independent of ownership, related to the total number of passengers. An accessible station is one on which a passenger can, from entering the station, reach the platform via level-access, without steps or equivalent. |

**Intermodality-related data is not yet sufficiently complete and robust for publishing**

High Level Industry KPI  Benchmarking KPI



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## Table of contents


- Purpose of this report
- Context
- **Benchmarking results**
  - Overview, framework and maturity
  - KPI results
  - **Assessment of the current status of benchmarking**

- Appendix




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# Overall this has been a successful phase of continuous development of the PRIME KPI exercise

## Assessment of the current status of benchmarking

- This phase of the PRIME KPI exercise between July 2017 and May 2018 has carried matters from a pilot into an **operating phase**
- It achieved a considerable development of the **data definitions and actual data**, which is documented in the Catalogue 2.1
- The **IT-tool** has been put into operation for data collection and validation and has been further developed, thus increasing usability and supporting a focused data collection as well as validation, interpretation and management of data
- A **first internal benchmarking report** includes additional evaluations such as comparisons against multi-annual averages, KPI correlations, qualitative relationships between KPIs and drivers of performance in the different PRIME KPI dimensions
- It is recognised that differences in KPI values across IMs can be due to a variety of factors, some within and some outside of the control of IMs, and a **ranking based on single KPIs is thus not appropriate**
- Further work is required to make the database more complete and to **improve the robustness and comparability** of the KPIs, with focus on strategic interests
- This **first published benchmarking report** represents a relevant step for railway infrastructure business benchmarking by providing a performance overview based on factual information
- Meanwhile the PRIME KPI subgroup recognises that the larger benefits from this exercise, i.e. mutual learning between IMs and business improvement, will be realised through perseverance and **further in-depth analysis**



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## Table of contents


- Purpose of this report
- Context
- Benchmarking results

- **Appendix**
  - Country characteristics & Market and operations
  - Organisation & Network




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# Country characteristics & Market and operations

## Contextual information – Countries (2016)

| | Spain | Norway | Germany | Finland | Belgium | Portugal | United Kingdom | Poland | Nether-lands | Italy | France | Sweden |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Country characteristics** | | | | | | | | | | | | |
| Country area (thousand km2)* | 506,0 | 323,8 | 357,1 | 338,4 | 30,5 | 92,1 | 243,8 | 312,7 | 41,5 | 301,3 | 633,1 | 450,3 |
| Population (million)* | 46,5 | 5,3 | 82,8 | 5,5 | 11,4 | 10,3 | 65,8 | 38,0 | 17,1 | 60,6 | 67,0 | 10,0 |
| Currency | EUR | NOK | EUR | EUR | EUR | EUR | GBP | PLN | EUR | EUR | EUR | SEK |
| GDP per head (index - EU28 100)* | 92 | 149 | 123 | 109 | 118 | 77 | 108 | 69 | 128 | 96 | 105 | 124 |
| Number of border countries | 6 | 3 | 9 | 3 | 4 | 1 | 1 | 7 | 2 | 6 | 8 | 2 |
| Population density (persons/km2) | 92,0 | 16,2 | 231,9 | 16,3 | 372,3 | 112,0 | 269,9 | 121,4 | 411,3 | 201,1 | 105,9 | 22,2 |
| **Market and operations (national)** | | | | | | | | | | | | |
| Number of RUs** | 38 | 7 | 448 | 30 | 7 | 10 | 51 | 50 | 39 | 26 | 21 | 32 |
| Share of NW managed by main IM*** | 99,9% | 100,0% | 85,7% | 100,0% | | | 97,2% | 85,8% | 94,4% | 84,0% | 100,0% | 89,1% |
| % of main lines in TEN-T core network**** | 54% | 0% | 25% | 22% | 34% | 57% | 22% | 25% | 28% | 33% | 31% | 36% |
| Modal share of rail freight* | 5,9% | 12,9% | 19,3% | 14,1% | 11,1% | 14,1% | 11,7% | 25,5% | 6,1% | 13,4% | 11,7% | 29,4% |
| Modal share of rail passengers* | 6,7% | 4,9% | 8,4% | 5,3% | 7,8% | 4,2% | 8,7% | 6,8% | 10,8% | 6,3% | 10,1% | 9,5% |
| % of freight in total train -km** | 9% | 15% | 23% | 28% | 14% | 14% | 6% | 32% | 0% | 12% | 14% | 23% |
| % of international in p-km** | 1% | 1% | 5% | 3% | 4% | 3% | 2% | 3% | 7% | 1% | 12% | 4% |
| % of international in tonne-km** | 18% | 46% | 48% | 35% | 78% | 8% | 0% | 43% | N/A | 50% | 30% | 36% |

* Source: Eurostat

** Source: EC RMMS

*** IRG Rail

**** TENtec database

Source: Data provided by the European Commission, 26 March 2018



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## Contextual information – Infrastructure Managers (2016)

| | Adif | Bane NOR | DB | FTA | Infrabel | IP | NR | PKP PLK | ProRail | RFI | SNCF R. | Trafik-verket |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Organisation** | | | | | | | | | | | | |
| Is the IM state-owned | Yes | Yes | Yes | Yes | | Yes | Yes | N/A | Yes | Yes | Yes | Yes |
| Are IM and operators integrated | No | No | Yes | No | | No | No | N/A | No | No | No | No |
| Number of FTE employees | 12976 | 4311 | 43974 | 647 | | 3732 | 38122 | 39153 | 3959 | 25132 | 53858 | 6607 |
| Age average | 53,23 | 45 | 47 | 48,1 | | 49 | | 46 | | 49 | 41,5 | |
| Male employees among IM's workforce | 86% | 74% | 81% | 60% | | 76% | 84% | 68% | 76% | 88% | 88% | 63% |
| **Network** | | | | | | | | | | | | |
| Main line km (lines in commercial use) | 15327 | 3856 | | 5926 | 3602 | 2546 | 31221 | 18427 | 3169 | 16788 | 28364 | 9684 |
| Total track-km | 21067 | 4560 | 60512 | 8520 | 8776 | 3663 | 31221 | 36079 | 6412 | 29486 | 60920 | 14114 |
| Total passenger high speed main track-km | 5248 | | | | 419 | | | | 294 | 2300 | 4413 | |
| Single track-km per total track-km | 46% | 92% | 0% | 62% | 22% | 0% | 13% | 27% | 15% | 31% | 20% | 55% |
| Degree of electrification of total network (KPI 1) | 73% | 60% | 69% | 46% | 83% | 75% | 42% | 69% | 77% | 77% | 56% | 72% |
| Utilisation rate (thousand train km/main track km) | 9,3 | 10,4 | 17,6 | 5,5 | | 9,9 | 18,2 | 6,4 | 24,8 | 12,9 | 7,8 | 10,8 |

Source: Data provided by the European Commission, 26 March 2018



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